Task Analysis of Food Service Worker at UW-Stout Dining Service Using Behavior Algorithm Technique

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Abstract

Today's customer has many more diverse needs than in the past. To meet these needs, the profession needs to have qualified professionals with knowledge of principles and processes in order to delight the customer.

This study examines task analysis of food service workers in the University of Wisconsin-Stout based on the present job, tasks, and their relationship to each other. The key to this study is the implementation of the behavior algorithm technique, an instrument to communicate complex rules and regulations by which the standard operating procedure will be determined in the form of flow chart for the job of food service workers.

This study is based on the results of direct observations, interviews/questionnaires, review of literature and other occupational sources. Based on the data collection techniques and review of literature, the study identifies duties and tasks, and further develops a job description. The research methodology of this study used the Algorithm chart that serves as the foundation for performance aids, and provides a way of capturing the decisions, operations, processes,

procedures, and knowledge that food server must master. On the basis of these findings, conclusions were drawn and recommendations for researchers and practitioners were made.

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Chapter I: Introduction

College and University Food Service is an exciting and demanding profession that has evolved from just serving meals to serving the customer. Today's customer has many more diverse needs than in the past. To meet these needs, the profession needs to have qualified professionals with knowledge of principles and processes for providing customer and personal services (NACUFS n.d.). This includes customer need assessment, meeting quality standards for services, and evaluation of customer satisfaction. The projected growth (2006-2016) of the food server is faster than average from 14% to 20% nationally (O*Net, n.d.).

Food service workers are the key person responsible for customer satisfaction and return business through effective and efficient operation of their job. In this occupation servers go through various stages, and decision processes for the smooth operation of the job. The job of the servers is highly decisional in nature because they are responsible for satisfying the needs of the customer, where they have to go above and beyond for customer satisfaction. Certain rules and regulations are required to complete tasks. Some of the task steps are sequenced with logical rules that govern the decision and some have to be completed in a specific way that complies with standard operating procedures. Some food servers receive little training or introduction before they start their new job and some receive no training and learn the job while they are doing it without knowing how to complete the tasks. The behavior algorithm, a visual display of the tasks or steps involved in performing the particular job and a precise set of instructions for solving a well defined problem, is guaranteed to produce the correct results if followed (Lee, 2008). It is a suitable technique for the selected occupation, food server, where the researcher will be able to develop the standard operating procedure through the use of algorithm chart.

Statement of the Problem

The management personnel of the UW-Stout Dining Service wants to assure that the tasks food servers do are effective and efficient resulting in increased customer satisfaction.

Purpose of the Study

Task analyses of food service workers will be performed based on their present job, tasks, and their relationship to each other. Using the behavior algorithm chart, an instrument to communicate complex rules and regulations, the standard operating procedure will be determined in the form of a flow chart for the job of food service workers.

Research Objectives

The objectives of this study are to:

1. Identify duties and tasks performed by food service worker.
2. Identify what job incumbents are required to do based on the present job, tasks, and their relationship to each other.
3. Serve as a foundation for the development of the job description and specification.
4. Identify the context for training and education programs.
5. Serve as the foundation for performance aids, including checklists, procedures, and performance appraisals.
6. Provide a way of capturing the decisions, operations, processes, procedures, and knowledge that food service must master.

Significance of the study

This study is important because of the occupation which is highly decisional in nature. This results in simple operations and processes with conditions to follow requiring rule based decisions. The UW-Stout Dining Service will find this information useful when determining the

need for developing an employee training program for new employees. It is helpful when helping new employees be familiar with the work environment. Finally, the purpose of this study was to perform task analyses of the food service workers and make recommendation for the employer to establish a standard way of operation.

Assumptions of the Study

The assumptions of the study are:

1. Participants will be knowledgeable and comfortable with the study's research instruments.
2. Secondary sources of the data including review of literature will meet the standard of reliability and validity.
3. The responses obtained from the observation and interviewees were accurate based upon their knowledge.

Definition of Terms

Task analysis, "Task Analysis can be defined as the study of what an operator (or team of operators) is required to do, in terms of actions and/or cognitive processes, to achieve a system goal". "Task analysis is therefore a methodology which is supported by a number of specific techniques to help the analyst collect information, organize it, and then use it to make various judgments or design decisions" (Kirwan and Ainsworth, 1992).

Behavior algorithm, method can be used to describe the steps of almost any task, even one that is not highly visible (such as rules of logic). But it is most appropriate –even essential – in describing tasks involving a high degree of discrimination, that is, when the performer has to make many choices (Zemke and Kramlinger, 1982).

Limitations of the Study

The limitations of the study are:

1. The researcher acknowledges that there are a significant numbers of task analysis techniques, other than what has been used in the study.
2. The study involved only the employees in the UW-Stout Dining Service.
3. Have to refer flowcharting symbols in order to understand a completed flowchart.

Methodology

The researcher intends to base the study on the results of direct observations, interviews/ questionnaires, and utilization of other occupational sources. Food servers performing the job in the UW-Stout Dining Service will be observed on the job with the permission of the supervisor and the worker. Before observing, the supervisor and the worker will be educated about the purpose of the observation. In the course of observation the worker will be questioned about sequence of the task and observe the critical situation while performing tasks. After the observation, the duties, tasks, and steps to perform the tasks are noted and reviewed with other occupational sources. The occupational source review and research will include the occupational information network, job description or specification of dining service of the food server. Further, the tasks noted will be validated with supervisor about the particular job. Identification of the decision point will be noted and converted into yes/no decision point in the flow chart. The sequence of steps will be listed and converted into a behavior algorithm chart. Then the developed chart will be revised and thus validated with the supervisor.

Chapter II: Literature Review

This chapter will review the existing literature on the topics that directly relates to this study. Books, journals, magazines, internet sites, and printed materials from the Dining Service were reviewed in the field of task analysis. Expertise and knowledge reviewed from these sources helped throughout the research process. The topics researched are divided into two areas the first includes: definition and importance of task analysis, fundamental steps of task analysis, task analysis process/methods, and techniques used in task analysis. The second area includes information about behavior algorithms, an information processing approach to task analysis.

Definition and Importance of Task Analysis

Task analysis (TA) "is the identification of the activities and responsibilities carried out by an individual within an occupation". The analysis is the process of collecting and organizing the elements of the job for the purpose of generating a training or occupational curriculum (Lee and Nelson, 2006). Waagen (1998) describes TA as the systematic identification of specific skills, knowledge tools, conditions, and requirements necessary to perform any job. It is "the study of what an operator is required to do, in terms of actions and/or cognitive processes, to achieve a system goal" (Kirwan et al. 1992 p. 1). Further, he describes TA as a methodology which is supported by a number of specific techniques to help the analyst collect information, organize it, and then use it to make various judgments or design decision. It is building the detailed picture of the system from the human perspective to ensure compatibility between system goals, human capabilities, and organization. TA can be applied to any occupation, job, duty, or task (Lee et al. 2006). Kirwan et al. (1992) mentioned the use of TA approaches lead to more efficient and effective integration of the human element into system design and operation in three principal areas: safety, productivity, and availability.

TA can also be used to identify management skills and the soft skills used in business and industry (Lee et al. 2006 & Brannick and Levine 2002). According to Brannick et al. (2002) TA covers various purposes of interest to organizations such as job description, job classification, job evaluation, job design and redesign, human resource requirements and specifications, performance appraisal, training, workers mobility, workforce planning, efficiency, safety, and legal and quasi-legal requirements as they manage their workforces. According to Lee et al. (2006) TA can be used to do the following:

- Identify what job incumbents are required to do based on their present jobs and associated tasks
- Build a foundation for the development of job description and specifications
- Select applicants for jobs or training
- Determine training that can be reduced or eliminated
- Identify the objectives for training
- Identify the context for training and education programs
- Build the foundation for performance aids, including checklists, procedures, decision tables, and performance appraisals
- Write or amend operating manuals and technical publications

TA is "intellectually and practically the most important part of the instructional system design (ISD) process, and it has been thought so for some time (Jonassen, Tessmer, and Hannum, 1999).

Fundamental Steps of Task Analysis

Undertaking a TA one must know the basic steps to follow and what methods of gathering data are most effective and appropriate for the study (Waagen, 1998, p. 2). The first step in preparing for a task analysis is to narrow down the area to be analyzed as early as

possible in the process to ensure proper focus (Lee et al. 2006). For the proper planning and analysis of the job or occupation, a TA model is very helpful (Appendix A). The steps in TA depend on the level of complexity of the job or occupation. However, according to Waagen (1998), the following fundamental steps are helpful for task analyses:

- Identify the major or critical outputs of the job. This will help you identify the major tasks and task groupings.
- Break down the major tasks into subtasks or steps. You have completed the task breakdown when you can achieve the goal or result of the task by completing all the steps or subtasks.
- Determine the type of all tasks and subtasks:
    - Knowledge tasks – require the trainee to acquire knowledge, information, or understanding. These tasks are also known as cognitive tasks.
    - Skills tasks – require a change in behavior or an action on the part of the trainee. These tasks are also called action tasks or behavior tasks.
- Collect all data necessary to document the tasks and subtasks. Using a variety of data sources increases the validity of the data. Make sure each task has a discernible output or result.
- Validate the data. You can confirm information derived from interviews by direct observation. Likewise, you can validate observation logs by reviewing with subject matter experts (SMEs). Direct observation or employee reviews can verify formal job descriptions or job analyses.
- Obtain review and approval of task analysis from client, training management, or other management in your organization. Provide management with the opportunity to modify the scope of the tasks, if needed.

- Finalize the reporting of the task analysis. The format you choose depends on the end use of the data. For the final result, you can generate any tables, flowcharts, and narrative descriptions in the detail needed.
- Distribute your findings to management for final approval. Once approved, your task analysis is complete.

Task Analysis Process/Methods

The TA process is defined as "the process of data collection, representation (and/or simulation) and analysis" (Kirwan et al. 1992 p. 15). There are many methods for performing a task analysis. Some include detailed planning and analysis, while other can be performed with minimum analysis (Lee et al. 2006), this method depends upon the needs of the organization, the time allotted for task, and the nature of the information to be identified (Waagen 1998). Some of the methods use to collect data for TA is:

Observation

Direct observation of workers performing tasks is the most valid method of collecting task analysis data (Lee et al. 2006 p. 112). Two types of observation methods are obtrusive and unobtrusive. Obtrusive methods are used to seek details from the selected workers that have mental decisions or complex operation and observed for an extended period of time with follow-up observation and questions. Unobtrusive methods are use to observe the workers without affecting the performance with limited focused behavior of the workers (Lee et al. 2006 p. 112). The observer may learn a good deal about a job simply by observing and recording what a worker does (Brannick et al. 2002, p. 16). There are various techniques used while observing (e.g. direct visual observation, remote observation via closed circuit television or video-recording, participant observation, time-lapse photography, etc.) but it depends on the particular requirements of a study (Kirwan et al., 1992, p.53). Kirwan et al. (1992) mentioned

observational methods can be used to identify and develop explanations of individual differences in task performance. For instance a significant difference in performance between left and right handed operators would probably not be noticed, unless the investigators had enough insight to predict it in advance. According to Waagen (1998) the following things have to be considered when directly observing the workers performing tasks in the work setting:

- Make sure that you explain to the employees, their supervisors, and union representatives the purpose of your observation.
- Explain that the work performed during the observation period must be done exactly as it is always done, not modified because of the observer.
- Take notes on each work task and element.
- Use the observation data to validate findings obtained through other data-gathering methods.

Interviews

Interviewing is the most commonly used organizational data gathering tool (Jonassen, et al. 1999, p. 253). It is widely used, not only in the human factors area, but as a general technique in personnel psychology and for knowledge elicitation (Kirwan et al. 1992, p.66). In the interview process the job analyst asks questions of jobholders and supervisors about a job under study (Brannick et al. 2002, p. 16). According to Lee et al. (2006, p.115) the structure of the interview can be any of the following:

- Highly structured – fact-to-face filling out questionnaire (e.g. census takers)
- Moderately structured – specific questions asked, but in a conversational manner
- Unstructured – no specific questions, but a topic; the flow depends on where the interviewee leads the conversation

Jonassen et al. (1999), assumes two things in the interview process: the person whom you are interviewing is truly an expert, and that you conduct the interview in a competent and productive manner. The interview can be both the individual focus and group focus. The procedure for conducting the interview varies with the nature of information you are seeking, type of interview and the situation that have been chosen. Jonassen et al. 1999, p. 255-257) explains the steps are organized into what to do before, during, and after the interview.

Table 1

Steps to organize before, during, and after the interview

1.	Before the interview	• Prepare for the interview; become task-literate • Choose the interviewee(s) • Write the interview questions on cards • Schedule the interview
2.	During the interview	• Introduce yourself and explain the purpose of the interview • Build a trusting relationship • Ask question by topic • Listen to the interviewee • Take notes • Always conclude with an open-ended question • Thank the interviewee for his/her time and effort

3.	After the interview	• Compile and analyze the results • Follow up

Printed materials

Another data collection method is through the printed materials. Job analyses, university or technical training materials, job descriptions, and technical manuals are other sources that include information about the job or processes (Waagen, 1998, p.6).

Questionnaire

The other form of data collecting method is questionnaire. It is "typically a highly formalized activity although it is possible for open-ended questions to be included, where the individual may write sentences, or even paragraphs, in response to requests for information" (Kirwan et al. 1992, p. 59). There are several types of questions which can be used, such as multiple choice items, rating scales, ranking, and open-ended. The questionnaire allows for a great deal of flexibility of administration (Kirwan et al. 1992, p. 59). According to Waagen (1998) the questionnaire should be designed with the help of SME to ensure that the questions are focused and accurate. It should be tested with a sample group to verify that its directions are clear and easy to understand. It is generally used to gather data from the large numbers of geographically dispersed employees or to add validity to data gathered from other methods.

Occupational information network (O*Net)

The Occupational Information Network is another form of data collection Brannick et al. (2002) discusses that the O*Net is a computer database via the internet, its main application are matching people to jobs and describing the content of jobs. It is useful for comparing jobs on multiple attributes such as basic skills and cross functional knowledge, knowledge, education, training, and experience. The O*Net system serves as the nation's primary source of

occupational information, providing comprehensive information on key attributes and characteristics of workers and occupations. The O*Net database houses this data and O*Net Online provides easy access to that information (O*Net OnLine, n.d.).

Techniques used in task analysis

Task analysis techniques are important to the appropriateness of the type of data collected and the decision s that will be made based on the analysis results. Also, the type of information provided needs to be considered when data collection is selected (Lee et al. 2006, p.55). Data collection is a necessary prerequisite of any form of task analysis, and since there are important practical insights for specific data collection approaches, these are dealt with as if they were techniques (Kirwan et al. 1992, p. 35). Table 2 below shows the widely used TA techniques and are categorized into five sub-sections which defines their major role within the task analysis process.

Table 2

Techniques used in task analysis

1.	Task data collection techniques	• Activity sampling (observation based) • Critical incident technique (subject based) • Observation (observation based) • Questionnaires (subject based) • Structured interviews (subject based) • Verbal protocols (subject based)
2.	Task description techniques	• Charting and network techniques • Decomposition methods • Hierarchical task analysis

		• Link analysis • Operational sequence diagrams • Timeline analysis
3.	Task simulation methods	• Computer modeling and simulation • Simulators/mock-ups • Table-top analysis • Walk-through and Talk-through
4.	Task behavior assessment methods	• Barrier and work safety analysis • Event trees • Failure modes and effects analysis • Fault trees • Hazard and operability analysis • Influence diagrams • Management oversight risk tree technique
5.	Task requirement evaluation methods	• Ergonomics checklists • Interface surveys

Behavior Algorithm Technique (BAT)

Behavior Algorithm Technique (BAT) is defined as "a record of system processes and message flows in the form of a 'structured flowchart' or 'algorithm' drawn to highlight the sequencing, nesting and control of processes and the converging and diverging of message and material flows" (Kirwan et al. 1992, p.84). According to Zemke et al, (1982,) an algorithm is:

> An orderly procedure or exact prescription for solving a problem, an algorithm leads the user from a collection of input data to a desired result. Strictly speaking, all rules and

regulations are algorithms. But in this context (Training), we limit the use of the term algorithm to presentation of rules and regulations in specific forms. In this sense, an algorithm is usually a decision tree and always a presentation in which the physical layout shows the relationships between inputs, data and outcomes. The algorithm replaces continuous prose as an instrument for communicating complex rules and regulations.

Algorithm is also considered as the process/decision flow chart and is the accurate model of how humans think and function (Appendix B). This algorithm technique uses the notational system that involves the symbols, some arrows, and yes/no (Y/N) directional indicators (Appendix C). According to a class lecture (Lee, 2008), BAT is considered by many to be the analysis of choice. This technique is ideal for the occupations that:

- Are highly decisional in nature
- Have simple operations and processes
- Require operations with conditions to follow

BAT works best if there are correct answers or logical rules that govern decisions and operations. It provides a way of capturing the decisions, discriminations, operations, processes, procedures, and knowledge pieces that trainee must master. Further, financial institutions are an example of an organization that has a variety of positions requiring rule based decision.

Selecting the occupation that is highly decisional in nature is the first step in developing the algorithm chart. After reviewing the job use the O*Net/DOT (Dictionary of Occupational Titles) or acquire the job description. The next step is to obtain the permission for observation from both the worker and the supervisor and they need to understand what is being

accomplished. After that the following steps give the general approach to develop a performance algorithm for task analysis purposes (Zemke et al, 1982, p. 62):

- Observe the performer doing the task(s). Record what you observe.
- When working on the description of tasks for a job that does not have a high number of primary verbal components, have the performer "think out loud" while performing the task.
    - Ask "who, what, when, where, and why" questions of the performer.
    - Have him/her speak into a tape recorder while performing, talking out loud and answering your queries.
    - Encourage this kind of chatter from your SME:
        - "Here's what I'm doing..."
        - "At this point, I could do A, B, or C..."
        - "But I'm doing B and here's why..."

  If the job is highly verbal, as in sales or people management, record what you see and hear. Write out specific questions about what you see and ask them as soon as possible, while the incident you observed is still fresh in the performer's mind. Generally encourage the performer to debrief him/ her into the recorder.
- Ask questions that probe and help define sequence (What comes before that?) and that clarify discrimination and decisions (Why? What happens if...?)
- Define and put in separate "piles" the operations and procedures, the decisions and discriminations that are made, and the major sequence, or "natural" flow, of activity.
- Construct a preliminary flow chart that (a) has a least-effort or mainline flow and (b) subordinates the "sometimes" and "occasionally" activities.

- Using one or more of the consensus techniques, obtain verification of your algorithm from an appropriate subject-matter-expert panel.

Summary

This study's literature review reveals on the process of developing the task analyses and by using the behavior algorithm technique can help organization comprehend the standard operating procedure in assuring that the tasks workers perform are effective and efficient for better results. This review focused on the importance of task analysis, the steps in undertaking task analysis, the process and methods while doing task analysis, various techniques of data collection procedures, different techniques used in the task analysis process, and focused on the behavior algorithm technique to perform a task analysis because of the selected occupation was highly decisional in nature, and require operations with conditions to follow.

Chapter III: Methodology

The food service worker is the key person responsible for the customer satisfaction in UW-Stout Dining Service. The occupation is highly decisional in nature, have simple operations and processes with conditions to follow requiring rule based decision. The purpose of this study is to perform a task analysis of the food service worker, and assure that the tasks food servers do are effective and efficient for better customer satisfaction results. Behavior algorithm chart, an instrument to communicate complex rules and regulations; the standard operating procedure will be determined in the form of flow chart for the job of food service worker. To perform a task analysis process, the following methods and procedures will be used in this study and will be explained in this chapter under the headings of Problem Statement, research objectives, subject selection and description, research design, instrumentation, data collection procedure, data analysis, limitation, and summary.

Problem Statement

The problem of this study is to assure that the tasks food servers do are effective, efficient, and in the logical manner. This research utilizes the behavior algorithm technique through direct observation, interviews, questionnaires, and review of other occupational sources.

Subject Selection and Description

Prior to the data collection, the researcher submitted the letter of permission to the management stating the purpose of the study. Then, the researcher discussed the purpose and objective of the study and the procedure used to collect the data with supervisor and employees. The researcher explained the process of observation, interview, and questionnaire that took place within the department. The researcher then asked for the volunteers who would be observed performing their tasks at their workstation. The researcher discussed the voluntary consent forms applicable to ensure the participants confidentiality of information presented by them.

Lastly, the researcher supplied the results at the end of the study to those interested of the outcome.

UW-Stout Dining Services (2008-2009) has 38 permanent, 10 temporary and 350 student employees totaling 398 employees. For this research project, the subjects were two food service workers from the Merle Price Commons. The two subjects were from the Kitchen Classic station and were observed from the opening of the station to the closing of the station. The two subjects were questioned during the observation. The supervisor and service manager were also interviewed.

Research Design

The literature review highlighted the importance of task analysis, its fundamental steps, and techniques used in task analysis, and these reviews led to the design of the research. The research methodology of this study is qualitative and descriptive in nature. The data was collected from three sources. First, the observation took place in the work setting where the researcher observed two volunteers from Merle Price Commons, Kitchen Classic. The observation was done from opening to the closing of the station, twice a week for two weeks. The researcher observed participants performing the tasks and noted decision points, operational processes, and conditions to follow the sequence of the tasks. The participants were questioned about the sequence of the tasks and critical situations while performing the tasks. Second, the tasks and steps to perform the tasks are noted and reviewed with occupational sources; occupational information network, job description and specification of the dining service. Third, face to face structured interviews were conducted with supervisors and managers for the validation of the tasks noted from the observation. The responses were recorded through the note taking technique.

Instrumentation

According to Waagen (1998) in "The How-To Reference Tool for Training & Development Professionals," the data collection methods for a task analysis are:

1. Observation (directly observing employees performing tasks in the work setting)
2. Individual interviews (direct questioning with significant involvement in the task performance)
3. Group interviews (focus interview and facilitated research sessions)
4. Printed materials (job description, technical training materials)
5. Questionnaires (checklists, surveys, polls that focus on detailed information about various work activities)
6. Checklists (tasks perform in the job), and
7. Diaries (activity schedules, logs and records of daily activities)

In this study the researcher used three types of instrumentation for the purpose of the study: observation, interview/questionnaires, and the occupation sources.

Observation

The first instrumentation used in this research is observation. The researcher observed the tasks performed by the workers in the work settings and recorded all of the tasks as they occurred. The subjects were also questioned along the way and their responses were documented throughout the process.

A direct observation form (Appendix E and F) was used to record the duties/tasks performed by the subjects on the job. The objectives used for the observation are:

- Identify duties and tasks performed by food service worker.
- Identify what job incumbent are required to do based on the present job, tasks, and their relationship to each other.

- Serve as a foundation for the development of the job description and specification.
- Provide a way of capturing the decisions, operations, processes, procedures, and knowledge that food service must master.

Interviews/Questionnaire

Structured face to face interviews (Appendix G) were conducted with the supervisor and manager for the validation of the tasks noted from the observation.

Occupational information network

The final instrumentation the researcher used was occupational information. Printed material, job specifications and job descriptions of the dining service and the online occupational source, O*Net, were used to gather tasks of food service workers. This was validated from the supervisor and manager.

Data Analysis

The research data was evaluated with the existing job documents, manuals, procedural guides, and the occupational information network and will be included in chapter IV. The observed tasks and the sequence steps were validated with the supervisor/manager in the interview process. The tasks or the sequence steps validated are designed into the behavior algorithm charts or process/decision flow charts. The charts were then reviewed as needed and validated with the supervisor/manager. These charts are included in Chapter IV.

Chapter IV: Results

Nationally, the projected growth (2006-2016) of the food server is faster than average from 14% to 20% (O*Net Online, n.d.). The profession needs to have qualified professionals with knowledge of principles and processes for providing customer satisfaction and personal service. Food service workers are the key personnel responsible for delighting the customers through effective and efficient operation of their job. In this occupation the food service worker has various responsibilities requiring decisions and processes for the smooth operation of the job.

The purpose of this study is to perform a task analysis of the food service worker, and assure that the tasks food servers do are effective and efficient for better customer satisfaction results. To meet the significance of this study the researcher used the direct observation technique of task analysis, the tasks and the steps performed were recorded down and reviewed with occupational sources; occupational information network, job description and specification. Further, face to face structured interviews with supervisors and managers were conducted for the validation of the tasks noted from the observation.

The food service worker has to follow certain rules and regulations for completion of the tasks. Some of the task steps are sequenced in logical rules that govern decisions and some have to be specific according to the rules and regulations. The Behavior Algorithm, a visual display of the tasks or steps involved in performing the particular job and a precise set of instructions for solving a well defined problem was a suitable technique for the selected occupation, food server where researcher will be able to develop the standard operating procedure through the use of algorithm chart.

Item Analysis

First the occupation is identified, Food Server and the steps of Task Analysis model (Appendix A) is used to define the occupation or job, the first step. Second, the occupation is reviewed from the occupational information network. From these first two steps the initial list of duties and tasks were developed and reviewed. The duties and tasks of the food server are as follows:

Duties

- Organizing service station for smooth food service operation
- Serving the food to customer as instructed within choices
- Controlling time and temperature during food service
- Applying proper hand washing procedures
- Closing the food service station following the standard closing procedure
- Obtaining information from all relevant sources
- Communicating effectively with supervisors, peers, and customers for efficient service
- Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects
- Maintaining good sanitation practices
- Analyzing the information to choose the best solution

Tasks

- Check lights and gauges for proper function of equipment
- Mise – En – Place (Put into the place) of the equipments and utensils for serving
- Select cleaning materials for the work station
- Follow proper hand washing procedures before, during and after the service
- Use gloves before serving food

- Greet the customer according to the time of the day
- Memorize customers preferences of food
- Explain food items if necessary
- Prepare food as per the preferences of customers.
- Demonstrate proper portion size
- Ensure the meals are delivered to correct recipient
- Check the quality of the food in serving dish
- Use proper tools & technique if required
- Replace the food whenever needed
- Turn off heat and lights at the end of the service
- Maintain clean and safe work station
- Close the service station at the end of the service.

After reviewing the duties and tasks the researcher randomly selected duties and further classified these into process steps to perform the duties. Further the job description of the Food Server was developed (Appendix D). The occupation selected is decisional in nature, simple operations and processes, and requires operations with conditions to follow the sequence of the task. The Behavior Algorithm Model (Appendix B), which forces large, complex and conditional behaviors into simple instructions and Yes/No questions, is selected to perform a task analysis. The symbols (Appendix C) are followed to create the flow chart.

Food Servers performing the job in the University Dining Service, University of Wisconsin-Stout were observed on the job with the permission of the supervisor and the worker. Before observing, the supervisor and the worker were educated about the need of the observation. During the course of observation the participant is questioned about the sequence of the task and observed critical situations while performing tasks. After the observation the

duties, the tasks are noted and reviewed with other occupational sources. The occupational sources reviewed and researched were the occupational information network, the hand out from Dining Service which has the duties and task involved of the food server. Further, the tasks noted were validated with the supervisor about the particular job. Identification of the decision point was noted and further converted into Yes/No decision points in the flow chart. The sequences of steps are listed and converted into the behavior algorithm chart. Then the developed chart is revised and thus validated with the supervisor. The first and third tasks were performed in the logical manner whereas the second task is followed with specific sequences to complete the given task.

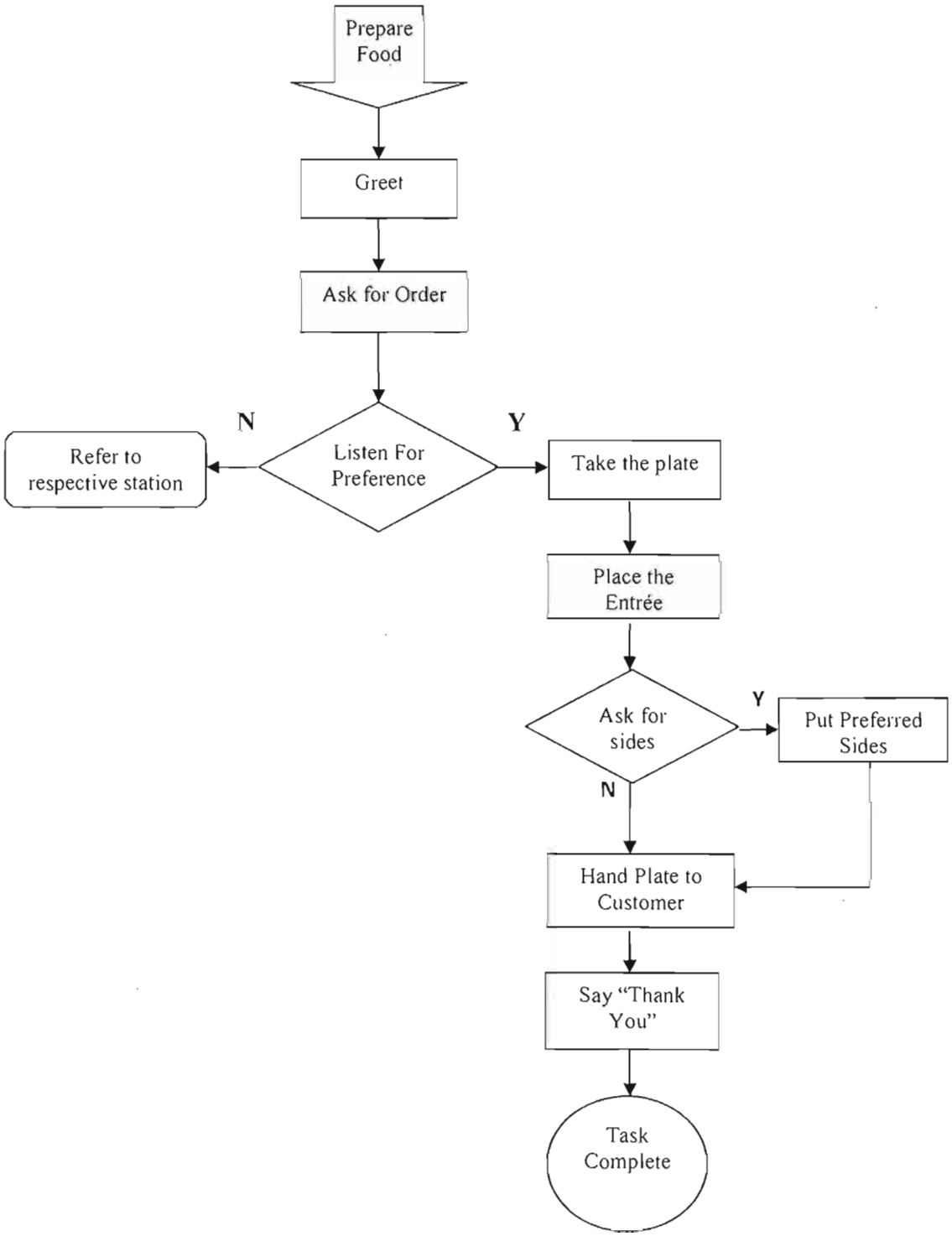
Using the Behavior Algorithm Technique, the three selected duties of the food service workers are sequenced into the process steps in the form of flow chart. The three selected duties are serving food to the customer as instructed within the choices, applying proper hand washing procedures, and closing the food service station following the standard closing procedure. Each task step is projected in the flow chart below.

Task 1: Serving Food to the Customer as Instructed with the Choices

- Greet the customer as per the time of the day
- Ask for the customers preference
- Listen for their preference for entrees
- Pick up the plate
- Put preferred entrée
- Ask for the preferred sides
- Hand plate to the customer
- Say Thank You to customer

Figure 1

Serving Food to the Customer as instructed within the choices

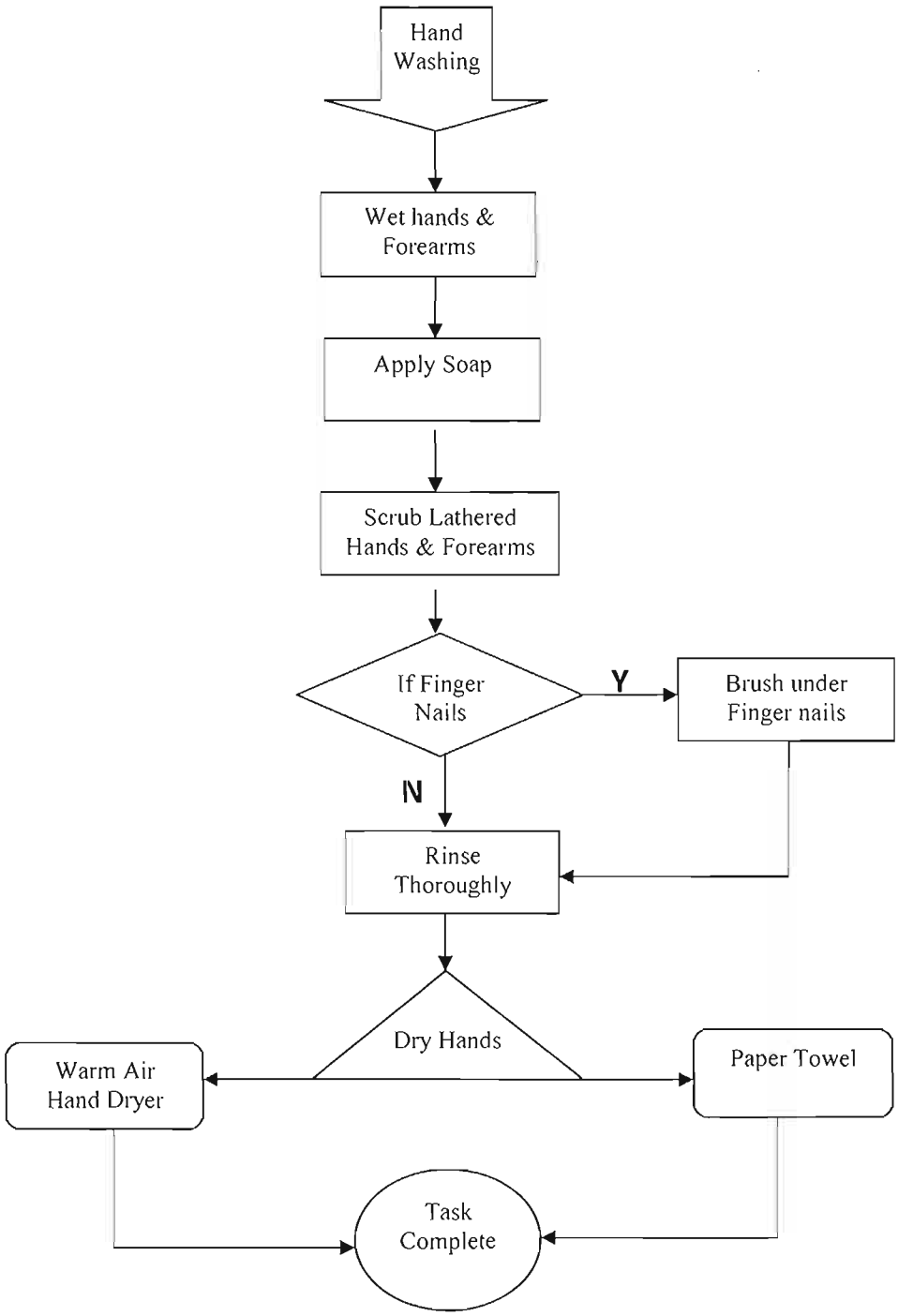


Task 2: Applying Proper Hand Washing Procedures

- Always wash hands before starting work, changing gloves, after using rest room, sneezing, coughing, touching body parts, smoking, eating or drinking, handling raw meat, any clean up activity, touching dirty dishes, and handling trash.
- Wet hands and forearms with warm, running water at least 100°F
- Apply soap on hands and forearms
- Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10 – 15 seconds.
- Apply brush under the finger nails if needed.
- Rinse thoroughly under warm running water for 5 – 10 seconds
- Dry hands and forearms thoroughly with paper towels.
- Dry hands for at least 30 seconds if using a warm air hand dryer.

Figure 2

Proper Hand Washing Technique

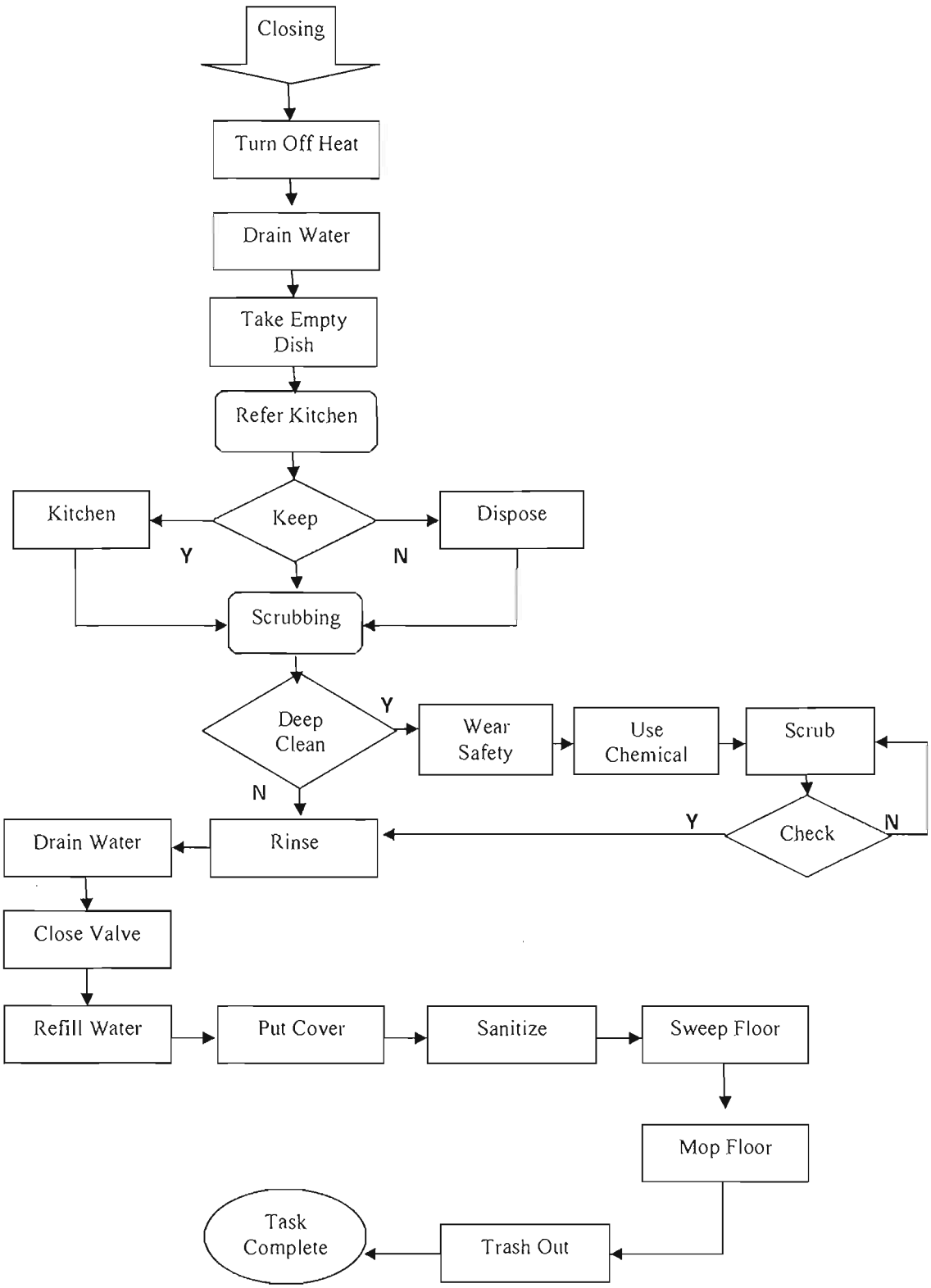


Task 3: Closing the Food Service Station Following the Standard Closing Procedure

- Turn the heat off.
- Drain water from the steam table wells into the drainage by opening the valve.
- Take the empty and dirty utensils to dish room
- Refer with kitchen staffs to keep or dispose leftovers.
- Hand the leftover food to the kitchen
- Refer supervisor if the steam table needs deep cleaning.
- Wear safety goggles, gloves and aprons before cleaning the steam wells.
- Use lime away and scrubbing pad to clean the steam wells.
- Rinse the steam wells with the clean water twice.
- Make sure to drain all the water from the steam wells.
- Close the valve of the steam well.
- Put water up to 1" in the steam wells making ready for next service.
- Put the cove in the steam wells
- Sanitize the work station with bleach water (3/4 tbsp in 1 gl.)
- Sweep and mop the floor.
- Take the trash to the trash room.

Figure 3

Closing the Service Station at the end of the Service



Chapter V: Discussion

This chapter includes a summary of the study, limitations, conclusions, and recommendations. The researcher begins with a summary of the research problem and objectives, the significance of the study, the methodology used in the study, and the major findings. The conclusions will cover the findings from the observations, interviews, and the occupational sources. Recommendations for this study and the further research will conclude this chapter. The purpose of this study is to perform task analysis of food service workers and make recommendations for the employer to establish standard operating principles. The objectives of the study were:

- Identify duties and tasks performed by food service worker.
- Identify what job incumbents are required to do based on the present job, tasks, and their relationship to each other.
- Serve as a foundation for the development of the job description and specification.
- Identify the context for training and education programs.
- Serve as the foundation for performance aids, including checklists, procedures, and performance appraisals.
- Provide a way of capturing the decisions, operations, processes, procedures, and knowledge that food service must master.

These objectives along with a review of literature helped to accomplish a broad knowledge on the study. Furthermore, the methodology; direct observation, interview and occupational sources used in the study were helpful in determining practices that were effective in resulting the potential problem.

The first objective of this study was to identify duties and tasks performed by food service worker. The second was to identify what job incumbents are required to do based on the

present job, tasks, and their relationship to each other. In these two objectives, direct observations as well as the occupational sources were used; as a result job description was designed that serves as a foundation, the third objective.

The last three objectives of the research; identify the content for training and education programs; serve as the foundation for performance aids; and provide a way of capturing the decisions, operations, processes, procedures, and knowledge that food service must master was obtained by the use of Behavior Algorithm Technique, an orderly procedure or exact prescription for solving a problem that leads the user from a collection of input data to desired results.

Limitations

This study only involved the employees of the UW-Stout Dining service. The results should not be generalized to other food service departments or industries. The research was limited to three task analysis techniques including: observation, interview and occupational sources. The research involves only two subjects for the observation method of task analysis. The research used the Behavior Algorithm Technique of task analysis, where flow chart represents the process and procedure to accomplish the task. The completed flowchart does not provide much explanation. Additionally, the participants have to know and understand flowcharting symbols.

Conclusions

The following conclusions were made based upon the research objectives. The researcher developed the job description including duties and tasks that the food service worker must master based on the observation, occupational sources, and literature review. The duties, tasks, and the process steps identified highlights the importance of the tasks food servers do are effective and efficient resulting in increased customer satisfaction.

Use of Behavior Algorithm Technique, the process/decision flow chart and is the accurate model of how human think and function serves the context for determining the need for developing an employee training program for new employees. Besides, it serves the foundation for performance aids, including checklists, procedures, and performance appraisal. Furthermore, this technique provides a way of capturing the decisions, operations, processes, procedures, and knowledge that food service workers must master.

However, this study can definitely contribute to the UW-Stout Dining service in achieving higher safety, productivity, and availability standards with effective and efficient food service workers resulting in increased customer satisfaction. Sharing the data will help other organizations understand the relation of operations, processes, procedures, and knowledge that food service must master.

The data collected helped to analyze and determine in capturing the decisions, operations, processes, procedures, and knowledge in achieving higher safety, productivity, and availability standards. This data helped to advance comprehensive understanding of safety, productivity, and availability standards which can become a part of employees' performance as they take great control in operation, processes, and procedures resulting in increased customer satisfaction. The data is, therefore, important in considering of standard operating procedure and the can be the context for training and education programs. Finally, the data can also help UW-Stout dining service become more reflective in providing excellent service and support the educational mission of the University.

Recommendations

Due to the time constraints, recommendations for further studies were also noted based on the limitations. The following recommendations are made by the researcher for the improvement of the University of Wisconsin-Stout's Dining Service.

- The results should be used in employee training and development programs and other future projects.
- The developed job description and the Algorithm chart should be included in the employee handbook.
- Emphasize the use of flow chart by incorporating it into weekly manager's meeting as well as in the departmental training.
- Educate employees with different learning techniques and methods.

This study provides the foundation to further research in the workplace to educate and familiarize with different learning techniques. Further refinement is needed in the research. Some additional alternatives for future research:

- Conduct research applying different task analysis techniques and data collection methods for more accuracy.
- Expand the study to include more diverse industry types. This would add insight to the current success factors and future challenges to establish the standard way of operation.

Last but not the least, the information from this study will add value to the research done in this area of task analysis and assist with future research.

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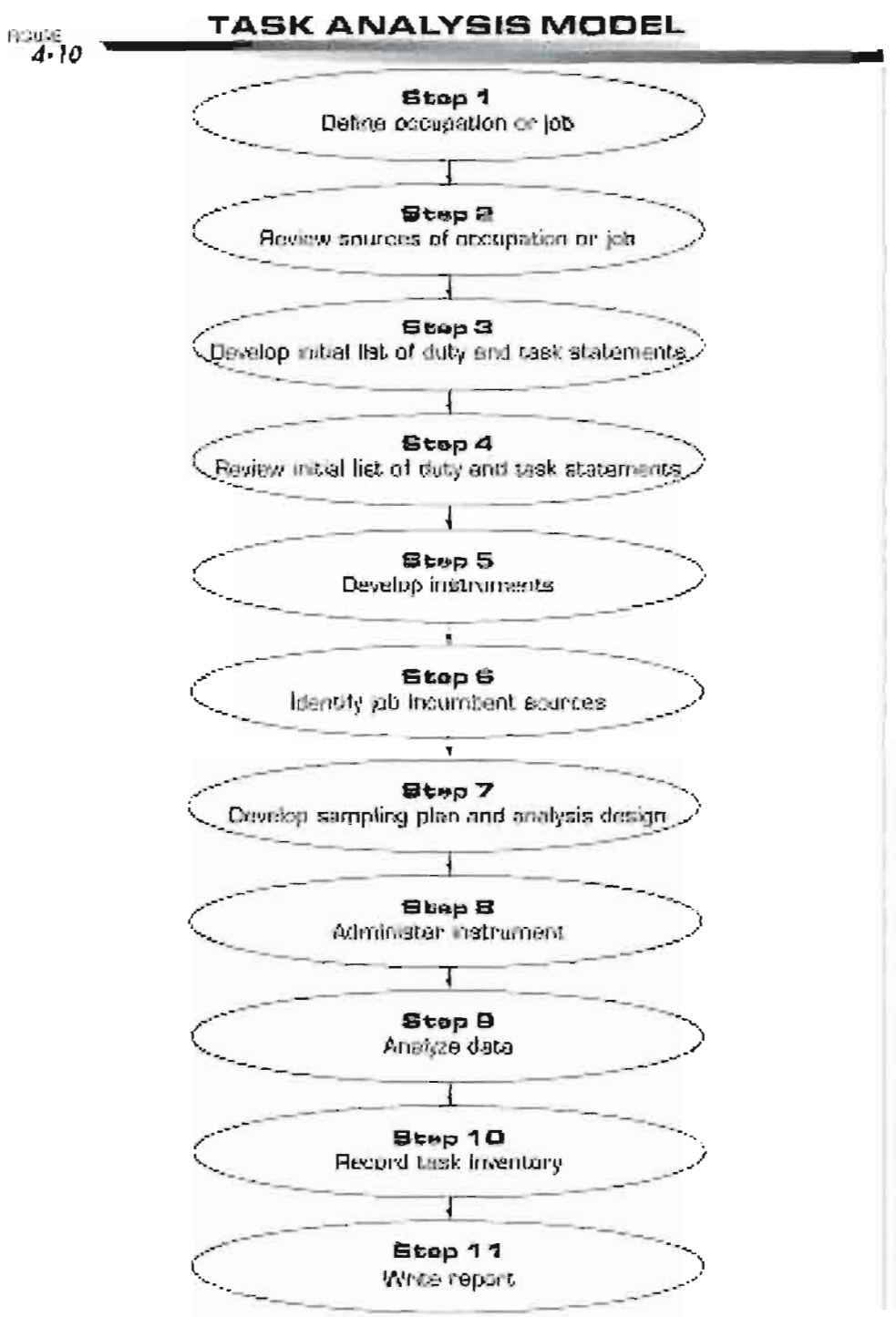
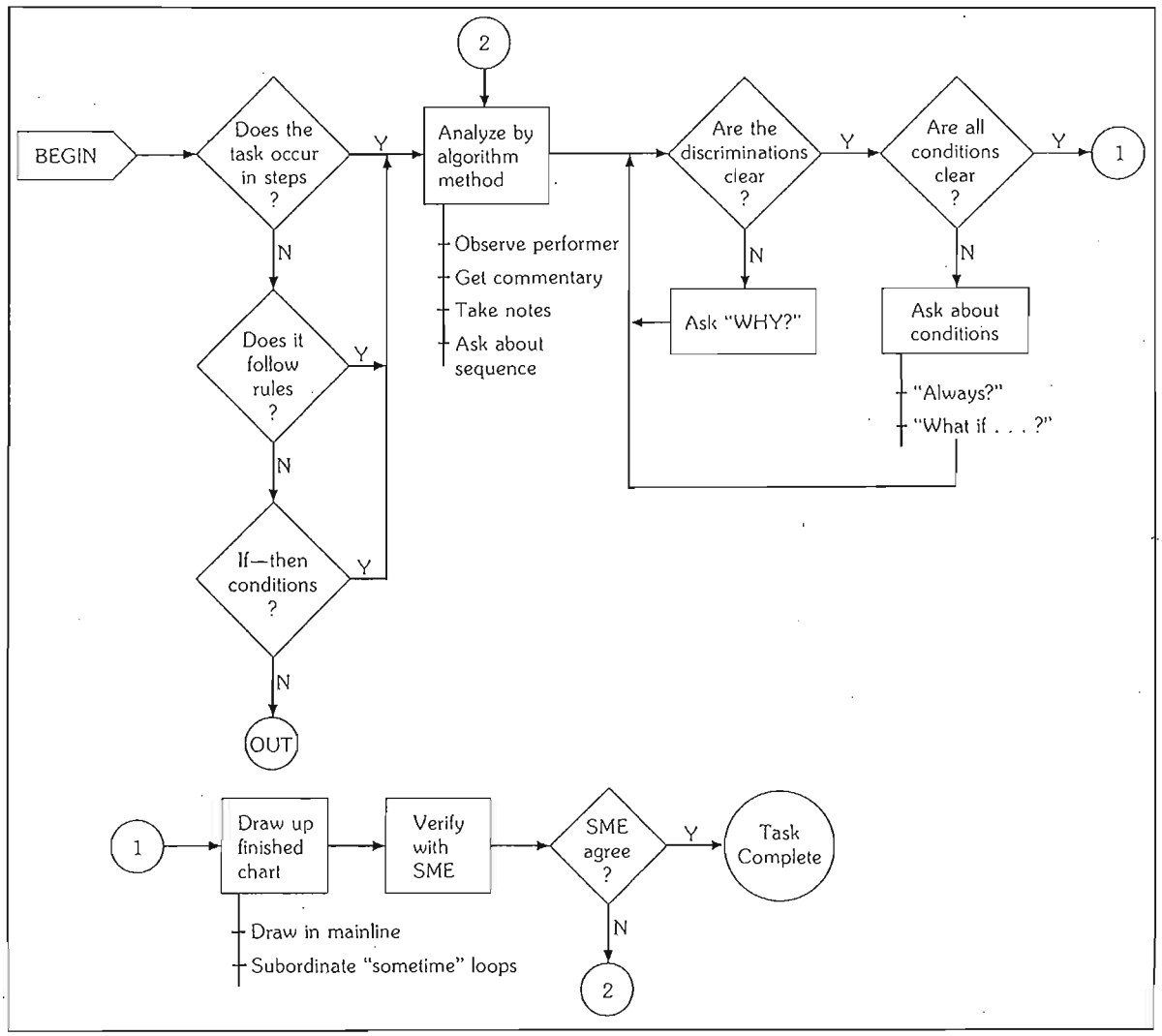
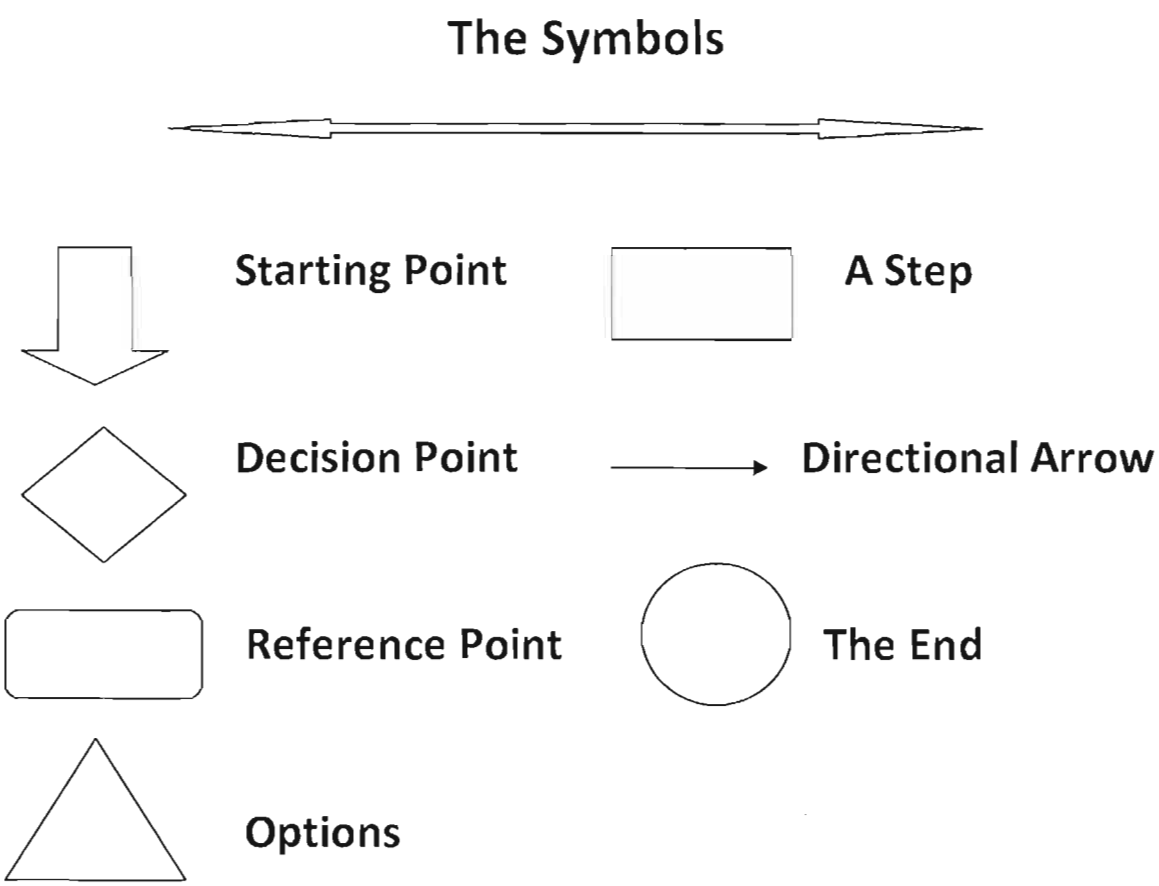
Appendix A: Task analysis model



Appendix B: Behavior algorithm model



Appendix C: System flow symbols



Appendix D: Job description

University Dining Service
Job Description
Food Servers

MANAGER TO COMPLETE	HUMAN RESOURCE TO COMPLETE	
Position Title: Food Server	**Range of Scheduled Hours:** 1st and 2nd Shift. All Other shifts as needed	
Job Code: 35 – 3041.00	**FSLA Status:** Exempt	**Avg. Time Commitment:** 40 Plus Hours
Department: Food & Beverage	**Pay Range Classification:** Professional Pay Band	
Report to: Food & Beverage Department Manager	**Date Approved:** 01/01/2009	**By:** HR dept./ K.P. Oli

Occupational Summary:

The University Dining Service staff is directly responsible for member and guest satisfaction in all food and beverage operations. Their purpose is to provide friendly, knowledgeable and efficient service to the members and guests in accordance with University Dining Service standard operating procedures, mission statement and core values. Seek opportunities to create memories by anticipating needs, exceeding expectations and building relationships.

Duties & Responsibilities:

- Organizing service station for smooth food service operation.
- Serving the food to the customer as per their needs.
- Controlling time and temperature during food service
- Closing the food service station following the standard closing procedure.
- Obtaining information from all relevant sources
- Communicating effectively with supervisors, peers, and customers for efficient service.
- Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Maintaining Good Sanitation Practices
- Analyzing the information to choose the best solution.

Education/ Training & Experience:

- High School Diploma preferred or equivalent or training related to food service
- At least 2 years previous service experience in food service sector.

Skills:

- Good Customer service skill
- Fluent in English language speaking
- Active listening and learning
- Social Perceptiveness, Being aware of others' reactions and understanding why they react as they do.
- Managing one's own time and the time of others
- Using logic and reasoning to identify the strengths and weaknesses of alternative solutions

POSITION DESCRIPTIONS ARE NOT INTENDED TO BE EXHAUSTIVE LISTS OF ALL RESPONSIBILITIES, SKILLS, OR EFFORTS.
THEY ARE INTENDED TO BE ACCURATE SUMMARIES OF WHAT THE POSITION INVOLVES AND WHAT IS REQUIRED TO PERFORM IT.

Appendix E: Task Analysis Form

Task Analysis

(CONTINUED)

Location _____ Page ____ Of ____ Page or Reference Number _____

Program or Unit _____ Effective Date _____

Department _____ Cancels Sheet Dated _____

Task _____ Analyst _____

First Order Headings	Second Order Headings	Sequential Steps in Performing the Task First Order Numerical Headings: Second Order Letter Heading	Notes

Appendix F: Task Inventory Form

TRAINING TECHNOLOGY SYSTEM

Task Inventory

Page _____ Of _____ Page or Reference No. _____

Location _____ Effective Date _____

Program or Unit _____ Cancels Sheet Dated _____

Department _____ Analyst _____

1. _____
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24. _____

Appendix G: Interview Questionnaire

Interview Questions

1. Please state your job title.
2. How long have you been on this job?
3. Does the task occur in steps?
4. Does the task always follow rules and sequence to complete the job?
5. What if the step does not provide solution?
6. Could you have done anything that could have been especially effective?
7. Would any of these provide a productive work environment?
    a. Job training, job description and specification, and standard operating principles, explain?
8. Would a standard operating procedure help to perform the job in sequential manner?
9. Please state any other comments you feel are relevant to this project.

Appendix H: Job Specification

Commons Dining
Jan/2006

Job Title: **Hot Entrée Server**

Major Goals:

1. Give patrons quick, courteous service.
2. Serve attractively plated properly portioned food to patrons.
3. Maintain a clean work area and practice sanitary serving techniques.
4. Follow proper food handling procedures.

Specific Duties

Pre-Service

1. Make sure steam wells are filled and turned on high temperature. (Water level should be at least 1 ½ to 2 inches from bottom in all wells.)
2. Assist salad bar person in setting up salad bar and condiment bar.
3. Check with student manager or lead worker to determine proper portion sizes and items served.
4. Determine which utensils should be used to serve items and gather them.
5. Ensure adequate supply of white towels and potholders.
6. Set up serving line with food items arranged to provide efficiency in service.
7. Make sure to have a fresh solution of bleach water (100 ppm) to wipe down serving area and line. (Use bleach solution after wiping down area with hot, soapy water.)

During Service

1. Serve patrons to order, quickly, courteously, properly portioned food using sanitary service methods.
2. Keep adequate supply of food on hot line informing food runner of items needed before running out.
3. Keep foods covered with plastic lids during slow service times. (Deep fried items should be partially covered.)
4. Maintain a clean work area. (Take empty pans and dirty dishes to dishroom immediately. Do not let them sit around on counter.)
5. Assist in other areas when not busy.

Post-Service

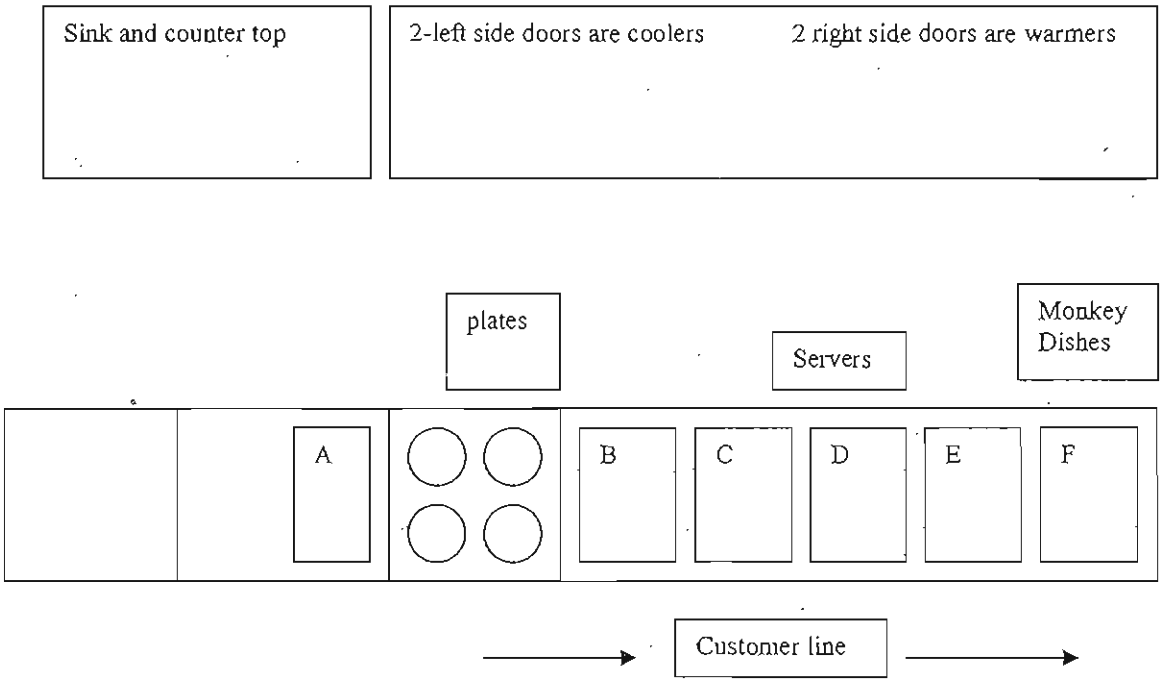
1. Take all dirty pans and utensils to pot and pan area.
2. Ensure food runner removes all leftover food items and takes to cook for recording.
3. Wrap leftover dinner roles.
4. Turn off steam wells, drain water and wipe down inside of well and all surfaces.
5. Close drain, refill water to 1 ½ to 2 inches of water and cover each well.
6. Wipe down entire mainline (to wall by phone).
7. Wipe down area behind line by sink (check inside microwave).
8. Sweep and mop floor and change bag in trash can.
9. Never leave shift without permission from student manager or lead worker.

***Perform any and all duties as assigned by student manger, lead worker, or service manger.**

Serving Techniques:

1. Servers should:
   a. Keep all serving areas clean, uncluttered, and free of spills.
   b. Use only clean clothes and keep them out of the customer's view when not in use.
   c. Wipe up spills immediately.
   d. Change utensils when necessary due to a build up of food on them.
   e. Be suggestive—sell foods. Know what food items are and what is in them (recipe book is kept near mainline).
   f. Use eye contact, a smile and personalized greeting for each customer served.
   g. Do not dish up any foods ahead of service.
   h. Aim to please the customer.
   i. Deal tactfully with complaints and/or direct them to lead worker or student manager.
   j. Cover hot foods during periods of slow service (helps retain heat and moisture).
   k. Check each dish for cleanliness and condition before use (dirty, cracked, or chipped dishes should not be used).
   l. Serve all food with gloved hand or proper utensil.
   m. Report unstandard pre-portioned items to management.
2. Plating of food:
   a. Vegetables are served in monkey dishes.
   b. Items should be placed inside rim of plate (food should not spill over edges).
   c. Serve proper portions (use grey book as guide).
   d. Follow guidelines of To go meal policy (# of containers and only one entrée is allowed).

Kitchen Classics Set-up



A. Sheet pan of baked dinner rolls-metal tongs

B-F. These will vary each meal. From left to right will be entrees, starches, and vegetables. Utensils will vary with each item.

To go containers are kept below on shelf (hinged 3-compartment). Customers are allowed only one. Customers are allowed one entrée per person. Portion sizes are set my manager and are to be followed exactly.