

Paper Code and Title: H05MF Management of Food Service

Module Code and Name: H05MF07 Work Simplification Techniques

Name of the Content Writer: Dr. S. Thilagamani

WORK SIMPLIFICATION TECHNIQUES

Objectives:

This module will enable the learners to

- a. Understand the methods available for work simplification techniques at work place of a food service
- b. explain the usability of the techniques as a tool for effective management

Introduction

Work simplification refers to the easy ways of doing work in an efficient and effective manner. Work in general at any work place can be simplified from five different aspects (a) Work area; (b) Worker's area of reach; (c) Work space; (d) Equipment, materials and suppliers; and (e) Movements at work.

Work area

This refers to the area of the work space, its height from the floor and the location of the equipment and materials to be used on the work surface. It is recommended that for a worker performing a task in the standing position, the height of the work surface from the floor should be just below the waist-line, so that there is no need to bend at the waist or hip while performing the task. If it the surface is too low, backache and general discomfort will result and if too high it will cause undue muscular strain and fatigue. When working in a seated position unnecessary stretching or straining or the neck muscles should be avoided. For comfort, feet should rest flat on the floor, so that an erect posture can be maintained.

Average recommended heights in work areas

Description	Height (in cms)
Height for work surface	90
Work surface	85-100
Shelf under work surface	80-95

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Sink top	90-100
Bottom of wall units above work top	135
Highest shelf for general use	180
Top of highest unit	225

Surface heights should also be planned to vary with the nature of the activity. For example, a sink unit top should be higher than a food preparation surface to take into account the need for reaching down to the base of the sink in the former. Likewise gas stoves should be fixed at a lower level than the work surface so that when a cooking pan is placed on it, the contents can be seen and stirred without standing on one's toes. Considering that the worker may be performing tasks over long period of time, badly planned work areas will probably result in mental irritability and accidents. Well planned work areas not only provide physical comfort, but also contribute to a sense of psychological and social well-being within the work environment.

Worker's area of reach

The body and reach characteristics of people directly influence the designing of areas. The area of the work surface is determined by the area of reach of the average worker.

The "area of reach" signifies the limits to which a person can stretch his or her hands to grasp materials and equipment, required for an activity. If the arms of a worker are fully extended outward to form a circle on the work surface, the area within the circle is termed as the area of "normal reach". A worker can reach any object in this area without stretching or moving other parts of the body. It is the most comfortable area of work involving the least amount of energy, and providing the most effective view of materials and actions for a particular job.

Work space

The amount of space available for work is important for completing tasks efficiently. The space should be large enough to place all the materials and equipment required, as well as allow for movement at work. In addition, extra space is necessary for placing completed parts of the work

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kept aside till it is needed again. For example, in making a salad, a number of vegetables or fruits may need to be cut and kept aside, away from the area of normal reach which would be required for the preparation of the salad dressing; finally all the parts of the salad would have to be put together before being served.

Equipment, materials and supplies

Equipment, materials and supplies, all have to be considered in relation to the physical structure of the kitchen and the persons using them. Their placement, suitability, quality and quantity, all determine how simple any work can be made. This awareness helps to establish plans that are economical in terms of human effort, time and other variable resources.

Any materials, supplies or equipment in regular use should be placed within the maximum reach zone, because activity is concentrated in the zone of normal reach. Shelves may be located within these zones for items which are used occasionally. This helps to increase the space within the work area. The normal and maximum reach zones are important in organizing work centres, if one remembers that reaching for an item by stretching upward is less strenuous than reaching outwards or downwards. Therefore heavier items are better kept on upper shelves.

The energy used at work greatly depends on the following factors:

- (i) Location of equipment in the work area: certain equipment may be better placed with in easy reach rather than stored in cupboards. For example, a blender fixed in a work centre requires much less effort to operate when needed than one which has to be removed from a cupboard every time a food item needs to be blended.
- (ii) Manner in which it is stored: Equipment may be stored in a variety of ways. They may be kept in their boxes after each use, depending on the frequency with which they are required; covered with weatherproof covers; or left uncovered. The manner of storing will determine whether a piece of equipment requires cleaning before each use or not. In tropical countries particularly, where weather conditions change so often from dusty to rainy to dry, and temperatures are conducive to harboring cockroaches, insects and flies, attention in terms of a lot of time and energy is

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required for cleaning. As far as possible, equipment should be kept ready for use in the normal reach zone, along with other ingredients and supplies to complete any task efficiently.

A good kitchen plan is one which achieves the maximum output from a given set of inputs. This can only be done if people at work are conscious of the need to reduce time and effort in performing a task. In the context of kitchen planning therefore, conserving space, time and energy are vital to the efficiency and profitability of any catering organization.

Movements and work

One needs to become conscious of how body movements are related to the amount of energy consumed. For this, it is necessary to understand that the body has been designed so that its weight is evenly distributed over the legs. When working in any position standing or seated, the centre of gravity of the body is disturbed. This causes unequal distribution of weight on the legs resulting in extra energy consumption to maintain the body position. If the balance is continuously disturbed in any activity, muscles get tired and fatigue sets in. For all positions at work therefore, one must keep the body in physical balance, i.e. maintain correct posture to enhance comfort and conserve energy. In addition, the muscles of the body are so arranged that the large muscles occur at those points in the body which are meant to take up maximum strain. With this in mind, the largest muscle in the part of the body moved should be brought into operation whenever an action is performed. This fact is realized when we observe that some jobs are tiring for some people and not for others. This is because some people waste their energy because of wrong postures and therefore less energy is available for the job, which consequently does not get completed as best as possible and in the shortest possible time. Developing the art of muscle coordinating to perform work with a tireless rhythm may require a conscious effort, but it is worthwhile making it till it becomes a habit – the habit of “not getting tired” at work.

Designing kitchens

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The features to consider in kitchen designing are location, structural details, layout, storage and general maintenance of the area.

Location

This refers to the exact position of the kitchen in relation to the rest of the building. As far as possible, the kitchen should be adjacent to the service area, and preferably in one corner of a building, in a north-west direction. This provides two side walls for windows and free access to air and natural light. A corner location also makes it accessible by road for purposes of receiving supplies and removal of garbage. The kitchen should be situated over ground to avoid flooding, drainage backflow and unnecessary expenses on artificial lighting and ventilation. In basement areas the humidity and heat of kitchens also make them prone to dampness and infestation.

Structural Features

These include drainage, electricity, gas connections and water supply systems. These are generally provided for before the equipment is installed, although ideally, according to Aclock” ... the kitchen structure should be built around the equipment and services. “other features include the design and finish of floors, walls, ceilings and work surfaces, followed by lighting and ventilation. Last, but not the least, the structure must be safe, and provide hygienic and sanitary conditions for those who work on it.

Drainage: the efficiency of the drainage system determines the hygiene and sanitation of the kitchen environment to a large extent. Poor drainage further leads to contamination of food with dire consequences. Problems can arise in drainage areas when fat gets collected in the drains and flow through them is restricted. All kitchens should therefore be fitted with grease traps on all drainage inlets to prevent backflow or blockage. Taking care of this aspect of drainage during the layout planning, can prevent unnecessary expenses in clearing blocked drains during the course of operation of the catering establishment. Drains should be at least 10 to 15 cm in diameter.

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Electricity and gas connections: Electricity and gas points to be provided in a kitchen must coincide with the plan of equipment in the kitchen and future plans for use. Therefore, once the placement of work centres is established and a list of equipment to be used at each centre formulated, the number of gas and electricity connections required can be determined.

Ceilings: any finish on ceilings should be heat resistant and not affected by steam or gases. A planner paint finish is most suitable, though it requires frequent redoing. Gloss paints, on ceilings, however, cause condensation and affect humidity in the kitchen, making conditions of work uncomfortable, as also unhygienic. If one can afford them, acoustical ceilings are important for absorbing kitchen noise.

In general, while choosing finishes for walls, floors and ceilings it would help to remember that dark colors reduce the level of illumination and affect the visibility in kitchens. It is also a good policy to invest on quality for long lasting effects.

Work surfaces

All work surfaces should be hardwearing, smooth and impervious. Stainless steel is by far the best among work surfaces in the kitchen, though the initial cost is much higher than that of any other surface finish. Work surfaces can be covered with laminated plastics, hardwood or ceramic tiles, with certain sections in marble or stainless steel, to reduce the cost. Laminated plastics are quite easy to maintain and not very costly, but they need to be inspected at regular intervals and replaced if they begin to lift at places. Hardwood work surfaces are a possibility but would need a lacquered finish to be practical in an institutional kitchen. They also get easily stained and marked and are expensive to install and maintain.

Lighting

Kitchen lighting should be designed purely to give the best illumination. In addition to overall lighting fittings need to be placed directly above work tables and food preparation areas. Sometimes hoods placed above cookers may interfere with the placement of light fittings. Many types of lighting are available for use in institutional kitchens, such as fluorescent, filament and mercury lamps.

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Fluorescent lamps: fluorescent lighting is more economical to use than filament lamps, because even though the initial cost is more, its maintenance cost is lower. Fluorescent lighting lasts almost six times as much as filament lighting and gives three to six times more illumination for the same electricity consumption. Some fluorescent models available have been illustrated in fig 4.9 and many others are marketed with and without covers.

The color effect of fluorescent lighting is correlated to the colour temperature. High efficiency fluorescent tubes reaching a temperature of 3000 to 4300 K do not give particularly good colour effects and are not recommended for use in kitchens, dining or storage areas where the colour of the food could be marked. Those tubes with lower light output are better for their colour rendering properties and therefore more suitable.

Mercury lamps: Mercury lamps may be used in kitchen and are available in ranges of 80 watts to 400 watts capacity. The colour, appearance, illumination and life are approximately equal to white fluorescent tube lamps. Enclosed fittings give diffused light, provide greater comfort to the eye and can also be easily fixed to false ceilings. The seal protects the lamp from moisture and dirt is also easier to clean.

Ventilation

Ventilation in kitchens is very important to prevent the process of condensation. i.e. droplets of moisture forming on equipment, food and surfaces. Condensation leads to formation of mold and bacteria, resulting in contamination of food. Good ventilation helps to replace oxygen used by workers during respiration and sets up a current of fresh air which drives out kitchen odours and fumes through suitable outlets provided. It also eliminates excessive heat from the cooking environment, regulating the temperature and making it more comfortable to work in. therefore sufficient attention needs to be paid to good ventilation and lighting in food preparation and service areas as it is vital to the preparation and provision of safe food and through it the safety of the customers as it.

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The modes of ventilation in kitchens are windows, vapour extractor hoods and exhaust fans. While provide an inlet for fresh air, they also open the kitchen to insects, flies and dust they are therefore not totally sufficient as a means of ventilation. To be useful, windows need to be fitted with fly-proof shutters which not only keep out the flies but also prevent draughts of from affecting the kitchen work.

Vapour extractor hoods are generally fitted over cooking equipment and have proved very effective in removing fumes, vapours and odours from kitchens. If these hoods are further fitted with grease –trap filters, the risk of fire through condensation of fat within the hood duct is minimized. A number of models are now available for use in small kitchens too.

Exhaust fans are fitted near the ceiling in the walls. They are designed to suck out the air from kitchens, which then gets replaced with fresh air from inlets placed in positions for the purpose. The area is wire meshed on the outside to make it fly proof. Usually no method of ventilation is used singly, but in combination they are very effective especially in large kitchens where many people work together at one time. In small kitchens the window or ventilator in combination with anyone other device would be enough.

Whatever be the mode of lighting and ventilation selected for a kitchen or the nature of its other structural features, it is important to keep in minds that the kitchen environment should be made as bright and cheerful as possible. Colours like blue, beige and cream are cool to the eye and counteract the feeling of heat in kitchens. Light colours also give better visibility. Equipment and furniture of natural colours also adds to visual comfort. A harmonious environment is stimulating and helps to bring out the best in people in terms of skill, creativity and therefore productivity.

Conclusion

In the process of designing kitchens it is vital to make provision for fire-fighting equipment and exit paths at convenient points with reference to work areas which carry a high fire hazard potential, such as cooking areas and electrical danger zones.

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In small establishments it may mean only one fire extinguisher, but nevertheless the awareness of its need is essential. Also alarm systems need to be incorporated while designing kitchens. Thus adopting the work simplification techniques will ease the employees and at the same time protect guests that would in turn create a good image of the hotel management

