USE OF VISUAL AIDS IN EFFECTIVE TRAINING[1] OF FOOD-SERVICE MANAGEMENT[2] IN FOODBORNE DISEASE CONTROL[3]

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Author's Note: When I was asked to present this session at the 55th Annual Meeting of IAMFES, I asked why the planning committee wanted a session on Visual Aids. The answer: "Because the meeting was to be held in Missouri, the show-me state, and visual aids are the best way to communicate with folks in that area."

Are Missourians any different from people elsewhere in wanting to be shown? I don't think so—they are just a little more frank about demanding visual proof. It is difficult enough to describe many common, everyday objects; if a group is unfamiliar with an object or its use, the difficulty is compounded. But a picture, a drawing, or the actual object demonstrated readily communicates the thought to an audience. And it is easier to describe familiar things than bacteria, which the audience cannot see, or a concept such as "cleanliness is a way of life." Visual aids can assist in meeting these communication challenges. Because the effective use of visual aids is such a large subject, I will limit my discussion to the correlation of visual aids to training methods appropriate in training food-service managers.

In the development of any program (including training) determining needs, setting goals, and defining objectives are initial steps in the administrative process. The need for training food-service managers is obvious because numerous foodborne disease outbreaks result from meals served in food-service establishments. These outbreaks are caused by breakdowns in operational procedures such as failing to properly refrigerate potentially hazardous foods; allowing foods to remain at warm temperatures that promote bacterial growth; failing to adequately cook or heat process foods; transferring contamination, by equipment and workers' hands, from raw foods of animal origin to cooked foods or to foods that require no cooking; failing to properly clean and disinfect kitchen equipment; infected workers who practice poor personal hygiene; and careless storage practices. Food-service managers are responsible for the day-to-day operations within food-service establishments; they are important because they can establish safe procedures and can prevent breakdowns of these procedures. They must be informed of, and accept the principles of, foodborne disease control before they will advocate and supervise safe food-preparation practices. Training of food workers has met with continued frustration because of the tremendous turnover of personnel in the food-service industry. Food-service managers often have the capability of solving foodborne disease problems inherent in their operation, and training can stimulate them to initiate needed change. The overwhelming reason to train managers, however, is that they are the group who can effect change in food-service establishments.

OBJECTIVES

For long-range goals, training should eventually reach all food-service managers. Managers of those establishments that serve the majority of the public should be included in early stages of the training project. Managers from establishments where outbreaks have occurred, or where health problems are likely to occur, should also be included in the initial seminars.

Typical objectives for a food service (or food processing plant) managers' training course are listed in Table 1.

These objectives are stated in terms of desired trainee responses and include acquisition of information, skills, and attitudes.

TOPICS

Another crucial step in course planning is selection of topics. Each topic should contribute in some distinct way to the accomplishment of one or more of the objectives. Suggested topics in relation to public health and foodborne disease control for a food-service managers' training course are listed in Table 2.

[1]For the purpose of this paper, training is defined as acts, processes, or methods used to bring about the acquisition of knowledge, skills, and/or attitudes in food-service managers for the purpose of modifying or improving work behavior.

[2]Food-service management is considered as the collective body of individuals who get things done in food-service establishments by supervising the work activities of other people.

[3]Presented at the 55th Annual Meeting of the International Association of Milk, Food, and Environmental Sanitarians, Inc., St. Louis, Missouri, August 18-22, 1968.

TABLE 1. OBJECTIVES FOR FOOD SERVICE (OR FOOD PROCESSING PLANT) MANAGERS TRAINING COURSE

Acquisition of information

1) Understand sources and modes of spread of major foodborne pathogens of concern to the industry.
2) Learn methods of minimizing contamination or preventing recontamination of foods by pathogens at all steps of the operation.
3) Learn methods of inhibiting growth of foodborne pathogens at appropriate steps of the operation.
4) Learn methods of destroying foodborne pathogens at appropriate stages of food processing.
5) Become aware of reliable sources of information, materials, training aids, and assistance for training line supervisors and workers.

Acquisition of skills

6) Develop skills in managerial procedures that facilitate a sanitary operation.

Acquisition of attitudes

7) Become aware of the economics of sanitary practices.
8) Realize that the supervisory health agency can, and is willing to, assist in solving many health and sanitation problems and serve as consultants and trainers (develop a better understanding of the health department's food hygiene program).
9) Develop an attitude of social and public health responsibilities for the foods prepared, stored, or sold.
10) Become motivated to implement training of personnel.

TABLE 2. SUGGESTED TOPICS FOR FOOD-SERVICE MANAGERS' TRAINING COURSE

1) Important foodborne diseases of concern to the industry (staphylococcal intoxication, salmonellosis, *Clostridium perfringens* foodborne illness)
2) Equipment layout, design, and construction
3) Operational flow in food-service establishments (disease control and related sanitation activities)
   a. Food sources, menu planning, and purchasing
   b. Receiving and storing
   c. Preparing and cooking
   d. Hot holding, chilling, and serving
   e. Disposition of leftovers
4) Cleanup and sanitary maintenance of equipment
5) Personnel management, supervision, and training

Both the topics and objectives probably would have to be modified to cope with specific community food hygiene problems or to conform with a particular health department's food hygiene program; however, they will serve as examples. Based on the objectives, specific desired outcomes (not shown in Table 1) for each topic may be further stated in measurable terms to serve as the basis for evaluation of a course.

Before a seminar is presented, or at the start of the first session, a discussion could be held with the managers to get them to identify their health-related responsibilities and to understand the manner in which these responsibilities can be successfully discharged. A chalkboard, flipchart, or overhead transparency can be used for listing responsibilities and methods of control. Such a session can contribute to the identification of needs for the course.

The following resume of the five topics includes mention of visual aids which could enhance presentations. A few of these training aids may be obtained from governmental or commercial sources, but most can be developed at a low cost by the local health agency or the institution that is sponsoring or presenting the course. A summary of visual aids that have been used to enhance each topic is presented in Table 3.

IMPORTANT FOODBORNE DISEASES OF CONCERN TO THE INDUSTRY

In most U. S. communities, the important foodborne diseases of concern to the food-service and food-processing industries are staphylococcal intoxication, salmonellosis, and *Clostridium perfringens* foodborne illness. Slides can be developed to indicate the national, state, or community scope of the foodborne disease problem. They can also highlight the epidemiology of the foodborne diseases. Data from summary reports of foodborne outbreaks, reviews of typical outbreaks, pictures of important sources of organisms, and newspaper clippings of local events are useful slide material. Facts concerning the foodborne diseases are presented not only for the trainees to use to solve problems, but also because they influence the trainees' attitudes toward solving their own problems. Overhead projectuals illustrating the pertinent facets of a foodborne disease outbreak can be used as the basis of a class discussion in which the cause of the outbreak is determined. The problem is initiated by the instructor, then projectuals are used (but only when called for by the group) to supply all the information that is needed to solve the problem.

Few recent films are available on the subject of foodborne diseases. One film, *The Epidemiology of Salmonellosis in Man and Animals,* (M-558)[4] does show the broad scope of the salmonellosis problem. This film must be interpreted, however, to emphasize to food-service managers the salmonellosis hazards confronting their industry. Films illustrating foodborne outbreaks, *An Outbreak of Salmonella Infection* (M-148a)[4] and *An Outbreak of Staphylococcus Intoxication* (M-148b)[4], can be used to introduce a disease problem. After showing each film, the audience can be asked to suggest appropriate control

[4]Source: U.S. Department of Health, Education, and Welfare, Public Health Service, National Library of Medicine, National Medical Audiovisual Center, Atlanta, Georgia 30333.

TABLE 3. VISUAL AIDS AND TRAINING METHODS DEMONSTRATED OR MENTIONED FOR EACH SESSION

SESSION	*TRAINING METHOD*	*TRAINING AID*
Operator's Health Responsibilities	Discussion	(Chalkboard)*
		(Overhead Transparencies)
		(Flipchart)
Diseases	Lecture	Overhead Transparencies
		Slides
		(Motion Pictures)
		Outlines
		Brochures
	Discussion	(Chalkboard)
		Hook-and-Loop Displays
Layout	Lecture	(Chalkboard)
		Overhead Transparencies
		(Slides)
	Group Workshop	Problem Statements
		Templates
		Hook-and-Loop Displays
		Infrared Copying Machine
	Discussion	Overhead Transparencies
		Filmstrip
Operational Flow	Lecture	Hook-and-Loop Displays
		Slides
		Overhead Transparencies
		(Filmstrips)
		(Motion Pictures)
		(Outlines)
		Demonstration Material
	Discussion	(Chalkboard)
		Overhead Transparencies
Sanitary Maintenance	Lecture	(Slides)
		(Overhead Transparencies)
		(Chalkboard)
	Group Workshop No. 1	Problem Statements
		Infrared Copying Machine
		Overhead Transparencies
	Group Workshop No. 2	Same as above
		Demonstration Equipment
		Photographs
		Slides
	Discussion	(Chalkboard)
		Slides
Management	Lecture	Overhead Transparencies
		(Slides)
	Group Involvement	Open-End Films
		(Role Playing)
		Fact Sheet Forms
		Problem Statements
		(In-Basket Technique)
		Inspection Form
		Overhead Transparencies with Overlays
		(Chalkboard)

*( ) Not shown during presentation of paper.

features for each disease. A hook-and-loop board and placards, or an overhead transparency with overlays—or a chalkboard—can be used for this summary. Under each disease category, the principles of control can be listed or checked. This technique stimulates discussion, leads into the control aspects of the seminar, and gives the instructor some idea of the understanding of the group.

EQUIPMENT LAYOUT, DESIGN, AND CONSTRUCTION

There is considerable interest and value in the use of training problems designed for group solution in the classroom. Working groups offer an opportunity for trainees to become involved and promote assimilation of knowledge acquired through lectures or other means. This procedure can be illustrated through an example containing a session on kitchen layout. At the beginning of such a session, a short introductory lecture on the fundamentals of kitchen layout is presented. The class is then divided into groups. Each group is given an outline plan of a kitchen and a set of templates representing equipment to be included in the kitchen. The plan and templates are cut from a printed illustration of the solution of the problem. Templates are hinged on the back with Scotch tape, and these templates may be stuck down and moved from place to place. After groups have arrived at a decision on the arrangement, transparencies of the solutions are made on positive heat-sensitive plastic film in an infrared copying machine which should be made available in the classroom. The group solution is projected on a screen by an overhead projector. A spokesman from the group can report on the arrangement without turning off the lights, moving away from the projector in the front of the room, interrupting the projector beam, or turning his back to the class. The solution is then evaluated by the entire class.

Following all the group presentations, a filmstrip *Basic Principles of Kitchen Layout* (F-148e)[5] is shown, a solution sheet is handed out, and a final discussion is held. There is no claim that the school solution is either ideal or compatible with current architectural practices—but the objective of the exercise, to get managers to think about an efficient, sanitary kitchen layout that minimizes the opportunities for cross contamination and facilitates cleanup, has been accomplished. With permission from publishers, additional plans and problems can be developed from modern designs and layout arrangements printed in journals or books. At completion of the exercise, the class is in a frame of mind conducive for discussion, and factors of sanitary design and construction of equipment or other related topics can be discussed.

[5]Source: U.S. Department of Health, Education, and Welfare, Public Health Service, National Library of Medicine, National Medical Audiovisual Center, Atlanta, Georgia 30333.

OPERATIONAL FLOW IN FOOD-SERVICE ESTABLISHMENTS

Hook-and-loop displays are ideal visual aids for a topic that can be taught in stages and built up as a lecture progresses. A series of printed cards or illustrations are attached to the board at appropriate intervals in a presentation. Typical restaurant or food-service operational flow, illustrated in Fig. 1, is an example of hook-and-loop subject matter. A strip of "hooks" is glued to the back of a card or object. Light pressure on the object against the board imbeds scores of "hooks" into the "loops," (a dense tangle of fibers in the cloth on the board), and the object or placard adheres to the board. The hook-and-loop board is very useful for displaying objects and demonstration materials. A substantial weight can be supported by only a square inch or so of hook-material. For most purposes, hook and loop boards are superior to flannel or magnetic boards.

The most important aspects of practical foodborne disease control can be presented as each step of the operational flow in food-service establishments is discussed. This approach can make the principles of foodborne disease control become meaningful in terms of the everyday activities of food-service managers. The control of foodborne diseases should include information about minimizing contamination of foodstuffs, preventing recontamination of cooked foods, inhibiting multiplication of pathogens by prompt and adequate chilling or hot holding of prepared foods, and thorough cooking to destroy pathogens. Slides, flipcharts, or additional hook-and-loop displays can be used to illustrate additional details about foodborne disease control at each stage of food-service operation. These visual aids can be prepared

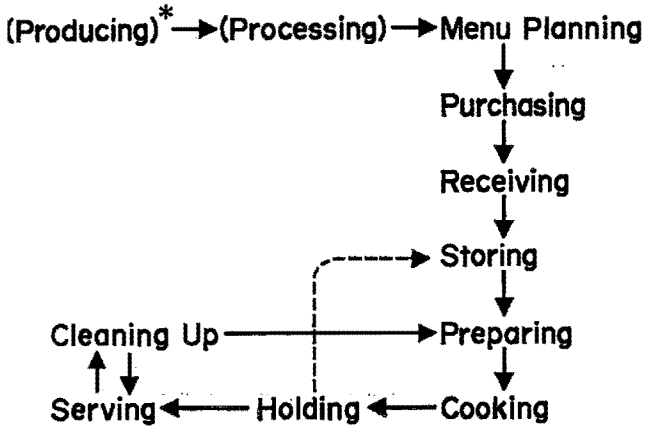

Figure 1. Operational flow in restaurants. *( ) Processes that occur outside the restaurant.

easily by any health agency and can be made to stress aspects of food-service operations that are the greatest problem in the community where the instruction is being conducted.

CLEANUP AND SANITARY MAINTENANCE OF EQUIPMENT

A problem that is continually noted by sanitarians during routine inspections of food-service establishments is that kitchen equipment is improperly cleaned or disinfected. One factor that contributes to this is a food-service operator's failure to systematize cleaning operations. An effective approach in teaching corrective measures in this area is the use of a group problem. The subject is introduced by a lecture featuring findings of local surveys or inspections, outbreaks associated with failure to adequately clean equipment, potentials for cross contamination, and values and techniques used in sanitary maintenance scheduling. Examples of sanitary maintenance schedules that have been prepared by industry and problem situations are distributed and discussed by the instructor. Next, groups are asked to develop a schedule. An overhead transparency is made (pencil —not ink—copy is required when making most infrared-processed transparencies). Transparencies are projected, and a spokesman from selected groups discusses the group's schedule. Following critiques of each presentation, the instructor makes final remarks to review important points and to clear up misunderstandings. Pen and pad (flipchart) can be substituted for the projectual if a copying machine is not available.

How to clean a piece of equipment effectively is a question that often comes up in discussions with managers. One way of handling this problem in a training class is, once again, through a group exercise. Following a short lecture, the class is challenged to develop a protocol for cleaning and disinfecting a piece of equipment, such as a meat-slicing machine. The machine may be displayed or pictures of it made available to the class. Groups of managers then develop a step-by-step procedure for cleaning the machine, stating the equipment and materials needed for cleaning. A transparency of the solution is made, and it is projected during the presentation by a spokesman. Following a critique by the class, a step-by-step disassembling, cleaning, and assembling procedure can be summarized by the instructor. A demonstration of disassembling and cleaning, or slides illustrating these operations, can enhance this final presentation.

Either or both of these group exercises can get managers involved and interested in effective ways of cleaning equipment. Sanitarians can follow these problem sessions with a discussion and answer questions on cleaning procedures.

PERSONNEL MANAGEMENT, SUPERVISION, AND TRAINING

Training in personnel management and supervision can be done by such methods as open-end films, buzz group problem solving, or role-playing situations, as well as group exercises. A portion of a film can sometimes be a more effective training aid than the entire feature. For example, film clips can be used to introduce a situation, and when the film is stopped, class members take the parts of the actors and continue the discussion with their neighbors. After trainees continue the discussion for a brief period, the problems or successes in the relationship are listed on a chalkboard and summarized by the instructor. This teaching method does not put as much pressure on trainees as does role playing, and a trainee will not become embarrassed in front of the entire class.

Another technique is to have class members write out a communication problem that they have faced or might anticipate. Pertinent data in the problem statement might include such information as the place, persons involved and their acquaintanceship, the problem situation, and the communication goal. Problem situations that bring out points compatible with course objectives are selected and given to groups of 4 to 6 people for discussion. These group discussions pool many ideas and will often involve the quiet student who will not speak out in class. Flipchart paper or overhead transparencies are used to aid presentations by group spokesmen.

The situations that could be used for these group involvement exercises might deal with such matters as getting an employee to practice better personal hygiene or to do a better job of cleaning, or getting managers to improve or develop self-inspectional programs.

If self-inspectional procedures are taught, class members can make practice inspections, or review slides of a detailed tour through a typical food-service establishment. After completing these real or simulated inspections, inspection forms can be filled out. Overhead transparencies of blank inspection forms, overlayed with a clear sheet of film, are used to record with wax pencil the inspection findings of class members so that they can be compared and discussed. Wax pencil is easily erased from plastic film so the film may be used again. Repetition of this exercise can lead to standardization of inspection findings among the group.

Because each manager is responsible for training employees under his supervision, a session on person-

nel training would be an adjunct to a course for food-service managers. Sources of visual aids having foodborne disease control significance can be enumerated. In problem-solving sessions, managers can be asked to develop a training program for food-service workers. Group solutions can be presented with the aid of overhead transparencies or flipcharts.

CONCLUSION

There are many methods of teaching. Only a few have been reviewed in this paper. The lecture is the most frequently used, but it is often a poor method if it is not enhanced by good visual aids. People learn better when they are involved. The visual aids and teaching situations that were discussed are not a "bag of tricks' but are training tools that help to involve trainees.

"Missourians have known what they've been talking about all the time when they say 'show me . . . .' (and ask for the use of visual aids).'

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FOOD AND DRUG ADMINISTRATION, TRAINING INSTITUTE

Training courses offered by the Public Health Service Training Institutes in Cincinnati, Ohio—July 1, 1969 - June 30, 1970. For information concerning the Environmental Control Administration Courses write to Environmental Control Administration, Training Institute, P. O. Box 30200, Cincinnati, Ohio 45230. For information concerning the milk and food courses of the Food and Drug Administration write to Food and Drug Administration, Training Institute, 222 E. Central Parkway, Cincinnati, Ohio 45202.

Milk and Food Protection Training

Current Practices in Food Protection (331)—Lubbock, Texas, July 14-18, 1969.
Management Aspects of Food Protection (314)—Dallas, Texas, July 21, 25, 1969.
Laboratory Analysis of Milk and Milk Products I (300)—Davis, Calif., July 21-25, 1969.
State Milk Laboratory Survey Officers Workshop (303)—Salt Lake City, Utah, July 28-August 1, 1969.
Current Practices in Food Protection (331)—Wheaton, Ill., August 11-15, 1969.
Milk Pasteurization Control and Tests (302)—Fort Worth, Tex., Aug. 12-14, 1969.
Milk Pasteurization Control and Tests (302)—Cincinnati, Ohio, Sept. 8-12, 1969.
Special Analytical Techniques in Environmental Media—Gas Chromatography (710)—Cincinnati, Ohio, Sept. 15-19, 1969.
Laboratory Analysis of Milk and Milk Products I (300)—Cincinnati, Ohio, Oct. 20-24, 1969.
Laboratory Analysis of Milk and Milk Products II (365)—Cincinnati, Ohio, Nov. 17-21, 1969.
Management Aspects of Food Protection (314)—Cincinnati, Ohio, Jan. 5-9, 1970.
Pesticide Residue Analysis of Foods (311)—Cincinnati, Ohio, Jan. 19-23, 1970.
Special Analytical Techniques in Environmental Media-Thin Layer Chromatography (711)—Cincinnati, Ohio, Feb. 2-4, 1970.
Egg Pasteurization Procedures (370)—Cincinnati, Ohio, Feb. 9-13, 1970.
Technology of Food Protection (374)—Cincinnati, Ohio, Mar. 9-13, 1970.
Food Microbiology (310)—Cincinnati, Ohio, Apr. 6-17, 1970.
Special Analytical Techniques in Environmental Media—Atomic Absorption (712)—Cincinnati, Ohio, June 1-3, 1970.

The following courses may be negotiated with the requesting agencies through the appropriate PHS Regional Office.
Milk Pasteurization Controls and Tests (302)
Management Aspects of Food Protection (314)
Current Practices in Food Protection (331)
Institutional Sanitary Food Service (330)
Sanitary Food Service (335)
Shellfish Patrol Activities (122)
Shellfish Growing Area Survey Procedures (125)
Sanitary Control of Shellfish (121)
Administrative Aspects of Shellfish Sanitation (123)

ENVIRONMENTAL CONTROL ADMINISTRATION, TRAINING INSTITUTE

Community Environmental Management Branch

Administrative Aspects of Housing Hygiene (384)—Cincinnati, Ohio, Dec. 1-5, 1969.
Principles of Accidental Injury Control (475)—Cincinnati, Ohio, Sept. 15-19, 1969.
Safety in the Laboratory (480)—Cincinnati, Ohio, Nov. 17-21, 1969.
Generating Community Action (420)—Cincinnati, Ohio, Dec. 8-12, 1969.
The following courses to be announced:
Basic Housing Inspection (381)—one week.
Individual Water Supply and Sewage Disposal (382)—3 days.
Recreational Sanitation (383)—one week.
Urban Rat Control (906)—one week.
Mosquito Control (907)—one week.
Insect Control (908)—one week.
Insect and Rodent Control (909)—two weeks.

Solid Waste Management Branch

Elements of Solid Waste Management (655)—Cincinnati, Ohio, Aug. 18-22, 1969.
Incineration—Design and Operation (675)—Cincinnati, Ohio, Sept. 22-26, 1969.

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