

Big O Foods, Inc., A Teaching Food Company

H.O. Jaynes, L.C. Hearne, and D.E. Phillips

Abstract

Three years ago the directors of a graduate course in food product development created a course that involves a hypothetical food company. Students, who simulate the actual operations of a real food company, are enthusiastic about the course.

When the Department of Food Technology and Science at the University of Tennessee, Knoxville, was created, a graduate level course in Food Product Development was included in the curriculum. Many food technology graduates enter this part of the food industry, and many others find a need to contribute to the process through various overlapping job responsibilities. Structuring a course to provide training in food product development presented difficulties within a conventional lecture — laboratory framework, so an unconventional approach was taken.

Relevant experience is one of the best avenues to learning (Beck and Monroe, 1969). To achieve such experience, the Food Product Development class set up a hypothetical food company, Big O Foods, Inc., with defined operations and capabilities. The class then assumed the role of a "venture group" within the company and went through the entire process of developing a suitable new product for the company, starting with ideas and working through to the point of market entry. Role playing in the hypothetical company served to simulate actual operations in a real food company.

The development of a new food product involves four essential steps which are closely interrelated. Initially, ideas are generated. Conversion of the idea to a concept which can be evaluated from the standpoint of economics and producibility follows. Then the concept is made into a physical form which is evaluated for marketability. Producing and marketing the finished product finalizes the process. At each progressive point judgments must be made based on the data accumulated. The class's effort proceeded along these lines, as shown in the flow chart, Figure 1.

The course began with definition of the company, Big O Foods, Inc. Its size and organization were detailed, along with information on operating divisions, product lines, and production capabilities. Facilities within the department which were available to the class for producing a new food product were constraining variables for defining the capabilities of the company. The instructor outlined general procedures and defined terminology used in the development of a new food product. Practical applications of these ideas were presented by the research and development director of a local food company (Schulte, 1974).

The class's first role as a venture group was to generate ideas for new products which would increase corporate growth. Ideas were presented by each individual for consideration by the group. Each idea was supported and justified by consumption surveys, current trends and forecasts in food sales, and advertisements of products currently on the market. Each proposed product had to be one which could be fit into, or adapted to, the company's current product line of bakery, frozen, and dairy foods. Each idea was discussed and evaluated as it fit the

Jaynes is associate professor in the Department of Food Technology and Science, University of Tennessee; Herne is in the Department of Food Science, Nutrition and Food Systems Administration, University of Tennessee; and Phillips is with the Foods and Nutrition Department, Kansas State University.

NEW PRODUCT DEVELOPMENT PLANNING CHART

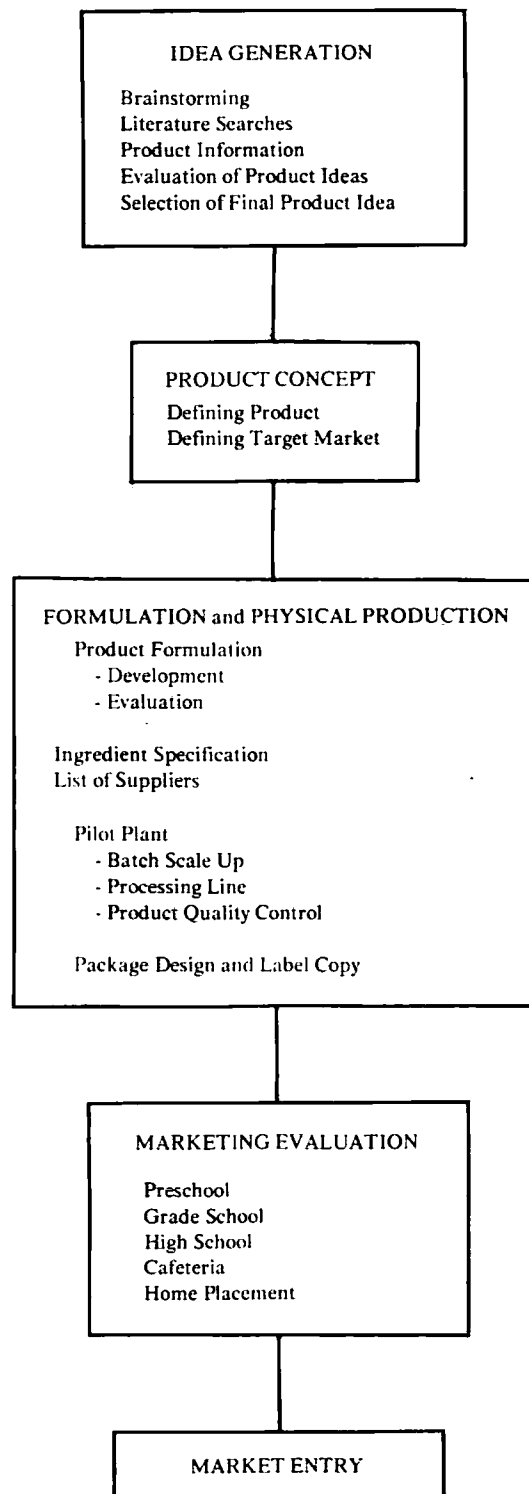


Figure 1 Flow chart for course organization

Girl _____

Signature _____

Boy _____

Age _____

PEANUT BUTTER ICE CREAM

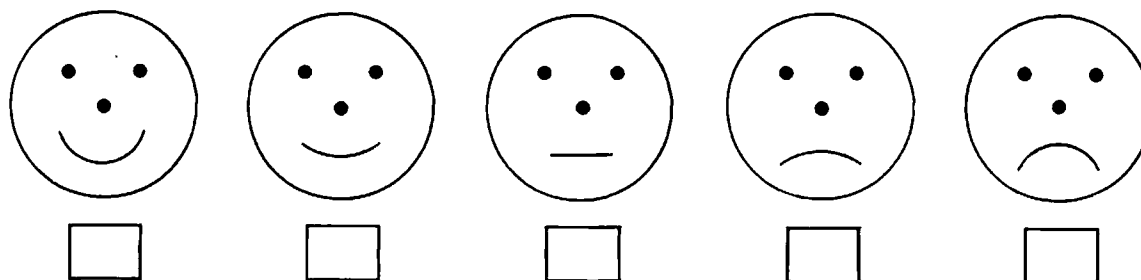


Figure 2. Facial hedonic scale used in grade school evaluation.

company's operations and goals, the constraint of a ten-week quarter, and production facilities available. The three ideas considered "most likely to succeed" were then evaluated by each person using an objective method (O'Meara, 1961), and the one which received the highest overall rating was chosen for development.

Peanut butter ice cream was the product idea chosen. To transform the product idea into a product concept, the group conceptualized it as "a frozen dessert made from an ice cream mix base with peanut butter flavor and color which would appeal especially to school age children."

The work involved in progressing from product concept to marketable product was subdivided into specific tasks: product formulation, pilot plant production, product evaluation, production and quality assurance procedures, ingredient specifications, and package design. The instructor outlined general responsibilities entailed in each task, and, from student preferences, task leaders and team members were chosen and made responsible for each area of work. Some tasks were subdivided so that each student served as a leader at least once. As the work progressed the class as a whole contributed through discussion of progress reports.

Peanut butter ice cream was not a completely new idea, and a recipe was available from the literature. With this as a starting point, the product was formulated to approximate a range of sensory attributes deemed acceptable by the class. Available time dictated that a minimum of variables could be investigated, so the class worked with levels of peanut butter and caramel color added to a basic 10 per cent ice cream mix. Production of the variables was scaled up to five-gallon freezer batches, and these were presented to an untrained sensory panel (50 - 60 people) who rated color, texture, and flavor on a hedonic scale. Through statistical analysis (analysis of variance and means), the preferred formulation was determined.

Once the formula was set, the pilot plant team made sufficient product for consumer testing with the projected target market to establish the sales potential of the product. The marketing evaluation presented some very interesting challenges to the product evaluation team. Since the company predicted that the major target market would include children and young people, evaluations were made in a nursery school, grade school, high school, and college cafeteria. Acceptance by the nursery school children was measured by percentage selection in a free choice situation with one repeat. Grade school children registered opinions via a facial hedonic scale (Figure 2) followed by percent of free choice sales on a succeeding day. High school students, college students, and faculty evaluations were made in the same manner except a descriptive seven-point hedonic scale was used. The descriptive points were: 7 - like very much, 6 - like moderately, 5 - like slightly, 4 - neither like nor dislike, 3 - dislike slightly, 2 - dislike moderately, 1 - dislike very much. Finally a limited home placement study was carried out with a detailed questionnaire. The questionnaire included questions to

describe the family, to establish their normal use of ice cream, to determine prices they would pay for the new product, and to assess their reaction to the product. When analyzed, the data collected indicated a product with good overall acceptability. Feedback from all evaluation inputs was noted and reserved for future product improvement.

Concurrently, the team working on production and quality assurance procedures wrote detailed manufacturing procedures for plant personnel. Quality assurance parameters for fill weights, composition, and microbiological control were established; and methods to assure compliance were written.

Another team compiled a list of all ingredients which "company plants" would use to produce peanut butter ice cream, with prices and at least two suitable suppliers for each item. Specifications for each ingredient were included, along with applicable tests to assure that they were within the specifications.

The packaging team developed a company trademark and designed a rectangular one-half gallon carton for the ice cream (Figure 3). They also developed label copy which included nutrition labeling required by FDA.

After the initiation of the course the instructor served mainly as an advisor to the working teams. A minimum of lectures, providing information on unfamiliar aspects of the work, were given. The instructor drew from his professional experience in a food product development center to guide the progress of the class. This experience was valuable, although it undoubtedly influenced the manner in which the course was structured. No text was used, but the book by Desrosier and Desrosier (1971) served as a helpful reference, along with other books and articles.

Evaluation of students for grading purposes was based on their notebook covering the work, peer and instructor evaluation of individual efforts, and a final oral examination.

The class was composed of graduate students in the Food Technology and Science Department in the College of Agriculture and the Department of Food Science and Food Systems Administration in the

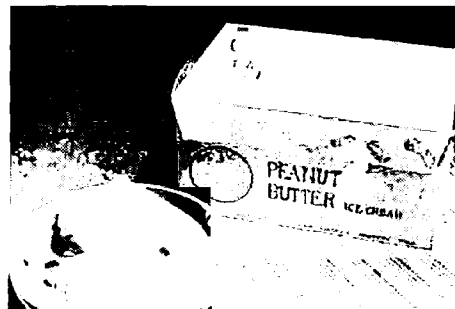


Figure 3. Peanut butter ice cream package.

College of Home Economics. Strengths for the Food Product Development course were derived by combining the academic training, the interests, and aptitudes of each class members. Rapport in class discussions was established readily as different students' knowledge and interests were focused on particular problems. When the quarter ended, their evaluations of the course and suggestions provided ideas that improved the course materially the second time it was taught. This method for structuring a course in Food Technology was received enthusiastically by members of the class. The actual experience of developing a new product gave students a working knowledge of situations they might face in the future as food technologists and food scientists. In general, courses in Food Technology and Food Science need to be evaluated and revised to better equip students with a basic

understanding of situations in the food industry. Other instructors could consider adapting the approach used in teaching this course to other courses in the food area.

References

- Beck, I. H. and Monroe, B. 1969. *Some dimensions of simulation*. Educ. Technol. 9: 45.
- Desrosier, N. W. and Desrosier, J. N. 1971. "Economics of New Food Product Development." Avi Pub. Co., Westport, Conn.
- Omeara, W. H. 1961. *Selecting profitable products*. Harvard Bus. Rev. 39(1): 83.
- Schulte, W. A. 1974. *Private communication*. White Lily Foods, Knoxville, Tenn.

Courses In Canadian Universities On The Economic and Management Aspects of Cooperatives

Paris Andrew

A survey revealed that only eight Canadian universities offer courses concerning the economic and management aspects of cooperatives. They are University of Alberta; Carleton University; Ecole des Hautes, Quebec; Sir George Williams University; St. Francis Xavier University; University of Guelph; University of Manitoba; and University of Regina. Contents of the courses and academic credit given for them varies among the universities.

Some economists believe that problems confronting the Canadian economy can be overcome by cooperatives and that more universities should therefore offer courses on cooperative organization with orientation in the management sciences. Following are descriptions of the courses presently offered that might serve as patterns for the development of new courses.

Outlines of Cooperative Courses

University of Alberta

Department of Agricultural Economics: Theory and Practice of Cooperation, non-credit course. Contact person, Professor J. Richter.

Description. The economic and sociological principles of cooperation; evaluation of such organizations; cooperative law and taxation; management and finance of cooperatives.

Carleton University

Department of Continuing Education: Theory and Practice, a non-credit course. Contact person, Professor Laidlaw. (an internationally known expert on cooperation).

Description. The course provides better understanding of cooperatives for employees of cooperatives, government officials, international development workers, and persons interested in forming cooperatives. The cooperatives are studied as business organizations with a social orientation; history, principles, and operating methods; influence of cooperatives on the Canadian economy; and cooperatives as a world-wide movement. Cooperatives examined include housing, credit unions and farming.

Dr. Andrew is with the Department of Agricultural Economics and Farm Management, The University of Manitoba, Winnipeg.

Ecole des hautes — Quebec

Department of Business Administration: Economic Theory of Cooperation, three credit hours. Contact person, Professor Albert Angers. This course is offered in the third year of Business Administration degree.

Description. Part 1 — Cooperatives as an institution. The substance, organizational process, and nature of cooperatives. Integration processes of cooperatives, place of cooperatives in the economic world, international organization, and the cooperative movement in Quebec and Canada.

Part 2 — Economic theory of cooperative activity. Cooperation as an economic system, structure of cooperative economy, vocabulary of economic theory related to cooperative economy, elements of micro economic analysis in true perspectives of the cooperative economy, and the cooperative economy as a sector in mixed economic systems.

Sir George Williams University

Department of Economics, Economics N-468 (447): Theory and Practice of cooperations, six credit hours. Contact person, Professor Davidovic (chief editor of the Canadian Journal of Public and Cooperative Economy).

Description. This course deals with the effect of cooperatives on economic and social development with emphasis on Quebec and Canada. Among topics discussed are the origins and development of the cooperative economy, difference between cooperative, capitalist, and communist economic systems; economic, social, educational, and moral transformations taking place under cooperative influence, and the role of cooperation on the international political scene. More specifically: definition and terminology of cooperatives, historical highlights, principle cooperative systems, development and role of cooperation, cooperation as an economic system, social repercussions of cooperative action, cooperatives as educational institutions, university teaching of cooperation, cooperatives as form of enterprise, cooperatives legislation, economics of cooperation, cooperative centralization, financing of cooperation, labor relationship within the cooperation structure, political impact of cooperative neutrality, cooperation and international politics, the cooperative economy in Canada, and the role of cooperatives in Quebec.

St. Francis Xavier University

Department of Sociology, Sociology 282: Sociology of Cooperation, three credit hours. Contact person, Professor Cujes.

Description. The course focuses on social aspects of economic cooperation in pre-industrial, industrial, and post-industrial societies. A history of cooperation; economic cooperation as an expression of the social process of cooperation; the social relationship of cooperatives and their relations with community; contemporary problems and options for the future.