The Guidelines for Enhancing Knowledge and Proficiency in Food Decoration Skills: RMUTP

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Abstract

The purpose of this study was to examine the level of knowledge and skills related to food decoration, and to identify consistent study activities for each academic year in the food service industry's student program through correspondence analysis. The population was 304 people. The results demonstrated a high level of knowledge and behavioral learning in the area of artistic skills. An analysis of the correlation between the academic year and activities aimed at enhancing knowledge, skills, and creativity in the art of food decoration revealed that the 1st year students engaged in activities related to analyzing food decoration design, the 2nd year students focused on the fundamentals of food decoration, the 3rd year students explored visual elements and art principles in food design and decoration, and the 4th year students assessed their ability to design food decorations before class. Activities to enhance art skills involved 1st year students participating in exhibitions, 2nd year students participating in artificial decoration activities, and 3rd and 4th year students participating in culinary workshops and learning about food decoration techniques. Activities to enhance creativity involved the 1st and 2nd students creating images from points, the 3rd students participating in art camp activities, and the 4th students learning how to add value to food through plating and photography.

Keywords: knowledge, learning behaviour, art skills, food decoration, creativity

1. Introduction

Art is the result of human creative power that manifests itself in various forms to appear aesthetically impressive or emotional according to the genius, wisdom, taste, and skills of each for satisfaction, pleasure, or to respond to customs, traditions, or religious beliefs (Nakphinij, 2004). Thai food, with its emphasis on decoration and its status as intricate and beautiful art, holds a significant place in the world. While, people eat food for its deliciousness in terms of shape and taste, form, smell, colour, and taste (Luebjamroen, 2010). Generally, consumers notice the food's appearance and color first, then its taste. When food is an art that shows the prosperity of the country, the people of the nation therefore need to help develop the art of food to be more diverse and worthier.

In providing bachelor's degree education in home economics. At Rajamangala University of Technology Phra Nakhon (RMUTP), the food service industry program is another well-known program that is popular with students and aims to prepare students with the necessary skills and knowledge to work in various fields related to the food and beverage service industry, including restaurants, hotels, and resorts (Faculty of Home Economics Technology, 2022). However, the program is not just about serving food and beverages. There are also related with the arts to promotes independent learning and personal development, which leads to the development of ideas and creativity in various fields, such as food creations, food publicity, vegetable and fruit carving, and flower arrangements. According to Sonkamfueai (2021), applying this subject to the course can benefit their occupations and the future food service industry, such as food business, food and beverage consultant, food designer, and chef. Moreover, it leads to consumer satisfaction.

As previously mentioned, learning the art of dish decoration presents a significant challenge. The data from interviews with the department head and faculty members in 2022 revealed that art education was as important as other subjects, despite being only a part of the curriculum. The results of the participant interview also revealed that students in the 1st–4th year of the food service industry program exhibit varying abilities and skills in the art

of food decoration, depending on their experiences, with some still lacking knowledge and skills in this area. Therefore, the art of food decoration anticipates the challenges faced by students in the service industry due to a deficiency in skills, serving as a roadmap for enhancing these skills. The Faculty of Home Economics Technology, Rajamangala University of Technology Phra Nakhon, should organize activities tailored to each year's students, aiming to enhance their potential and align with the current global market demands. It is also a wonderful opportunity to pursue a career in the future.

2. Method

This study is survey research that uses a questionnaire to collect data. The details of the study methods are as follows:

2.1 Problem Identification and Research Objectives

This study broadens the scope of learning management to include food decoration, aligning it with educational levels to improve knowledge, skills, and creativity in this field. The research problem was defined as "Which activities to promote learning about food decoration are consistent with the academic year?"

However, this study aimed to investigate the level of knowledge, learning behaviors, and creativity in food decoration among students from the food service industry at the Faculty of Home Economics Technology, RMUTP. Moreover, it aimed to examine the relationship between the academic year and the activities that students in the food service industry engage in to improve their knowledge, skills, and creativity in food decoration.

2.2 Data Collection

The primary focus of this research is on 1st–4th year students who are enrolled in the food service industry program at the Faculty of Home Economics Technology at RMUTP. In that academic year, there were a total of 304 students registered (Registration Service, 2022). Therefore, in this study, the researcher collected data from the entire population.

2.3 Research Design

The research tool was a questionnaire divided into five sections, as follows: Section 1: General information about the respondents; Section 2: Measurement of artistic knowledge; Section 3: Learning behavior; Section 4 involved knowledge-enhancing activities, while Section 5 featured open-ended opinion questionnaires on skills and creativity in food decoration. The procedure for inspecting the tool's quality involves the following steps: 1) submit the questionnaire to three experts to assess its content validity, considering the question and an objective consistency index (IOC) exceeding 0.50 (Harth et al., 2023); 2) test the questionnaire on 30 non-sample individuals. Then, the confidence value of the instrument was obtained by using the alpha coefficient formula. It was found that the reliability value of all questionnaires was equal to 0.973, which is higher than the specified criteria that the Cronbach-alpha coefficient must be > 0.70 (Bujang et al., 2018), and then used to collect additional data.

2.4 Data Analysis

The statistics used in this data analysis included: 1) general information about respondents, including frequency, percentage, and level of knowledge and learning behavior. The students' food decorating skills and creativity were analyzed using statistics (mean and standard deviation), and 2) the analysis of the congruence between the academic year and activities for enhancing knowledge, skills, and creativity in the art of plate decorating was analyzed using statistical correspondence analysis (CA) (Costa et al., 2013 ; Pasunon & Sombultawee, 2015).

3. Results

The findings from the study on the knowledge, learning behavior, skills, and creativity related to food decoration among students in the food service industry at the Faculty of Home Economics Technology, RMUTP, are divided into three parts:

Part 1: General information about respondents found that most of the students were 206 females, representing 67.8 percent, and 98 males, representing 32.2 percent, aged 21 years; 77 people, representing 25.3 percent; followed by 20-year-olds, representing 25.0 percent, studying in class. 102 students, or 33.6 percent, are in their first year of study, while 75 students, or 24.6 percent, are in their second year. Of these, 96 individuals, or 31.6 percent, have studied art for a period of 16 years or more, and 72 individuals, or 23.7 percent, have studied for a period of 6–10 years.

Part 2: The results of the knowledge level in art skills for food decoration

Table 1. The average and standard deviations of the knowledge level in art skills related to food decoration

Knowledge level in art skills for food decoration	$\bar{x}$	S.D.	Level
Skills for using points	3.57	0.77	high
Skills for using color	3.56	0.71	high
Skills for using line	3.52	0.76	high
Skills for using texture	3.46	0.79	high
Skills for using light and shadow	3.47	0.78	high
Skills for using shapes and forms	3.56	0.74	high
Overall	**3.52**	**0.64**	high

According to Table 1 the overall average level of knowledge of the art of food decoration was high ($\bar{x} = 3.52\pm0.64$). When considering each item, it was found that all of them were at the high level, respectively, in terms of skills in using points ($\bar{x} = 3.57\pm0.77$), skills in using shapes and forms ($\bar{x} = 3.56\pm0.74$), skills in using color ($\bar{x} = 3.56\pm0.71$), skills in using line ($\bar{x} = 3.52\pm0.76$), skills in using light and shadow ($\bar{x} = 3.47\pm0.78$), and the skills in using texture ($\bar{x} = 3.46\pm0.79$).

The results of learning behaviors, skills and creativity for food decoration.

Table 2. Mean and standard deviation of learning behaviors, skills and creativity for food decoration

Behavior	$\bar{x}$	S.D.	Level
Learning artistic behavior	3.60	0.64	high
Art practice behavior	3.41	0.73	high
Creative behavior	3.60	0.74	high
Overall	3.54	0.64	high

Table 2 revealed that the students' overall learning behavior, skills, and creativity for food decoration were at a high level. ($\bar{x} = 3.54\pm0.64$), and when considering each aspect, it was found that all were at a high level. Can be sorted in order of creative behavior ($\bar{x} = 3.60\pm0.74$), art practice behavior ($\bar{x} = 3.60\pm0.73$), and learning artistic behavior ($\bar{x} = 3.41\pm0.64$).

Part 3: The results of the correspondence analysis between the academic year and activities for enhancing knowledge, skills, and creativity for food decoration.

Table 3. The relationship between variables in years and activities that enhance knowledge, skills, and creativity in food decoration

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia Accounted for	Cumulative
Knowledge						
1	0.272	0.074			0.593	0.593
2	0.214	0.046			0.366	0.959
3	0.071	0.005			0.041	1.000
Total		0.125	38.053	0.013[a]	1.000	1.000
Skills						
1	0.301	0.091			0.727	0.727
2	0.168	0.028			0.226	0.952
3	0.077	0.006			0.048	1.000
Total		0.125	37.938	0.013[a]	1.000	1.000
Creativity						
1	0.205	0.042			0.539	0.539
2	0.152	0.023			0.296	0.835
3	0.113	0.013			0.165	1.000
Total		0.078	23.697	0.070[a]	1.000	1.000

The results of the data analysis were consistent between the academic year and knowledge-enhancing activities in food plate decoration. We used statistical correlation analysis to explain the relationship between academic years and knowledge-enhancing activities, and found that the proportion of inertia, equal to 0.959 or 9.59 percent, could explain the relationship between two variables and knowledge-enhancing activities, as shown in Figure 1.

The study of the relationship between the academic year and art skills-improving activities in food decoration found that the amount of inertia, which is 0.952 or 9.52 percent, could explain the connection between the two variables. Figure 2 illustrates the correlation between the academic year and art skills enhancement activities.

The data analysis of the relationship between the academic year and creative activities in food decoration revealed that the proportion of inertia could explain the relationship between the two variables, equal to 0.835 or 8.35 percent. Figure 3 illustrates the correlation between the academic year and creative activities for food decoration.
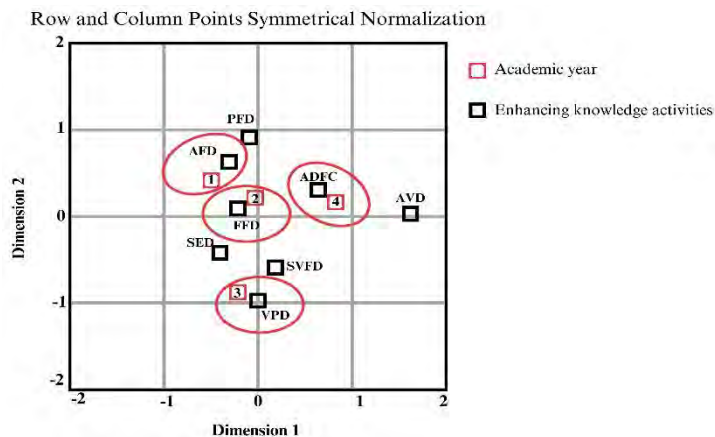

Figure 1. Correspondence diagram between the academic year and activities to enhance knowledge

for food decoration

AFD = Analyze food decoration design

FFD = Fundamentals of food decoration

VPD = Visual elements and principles of art in food design and decoration

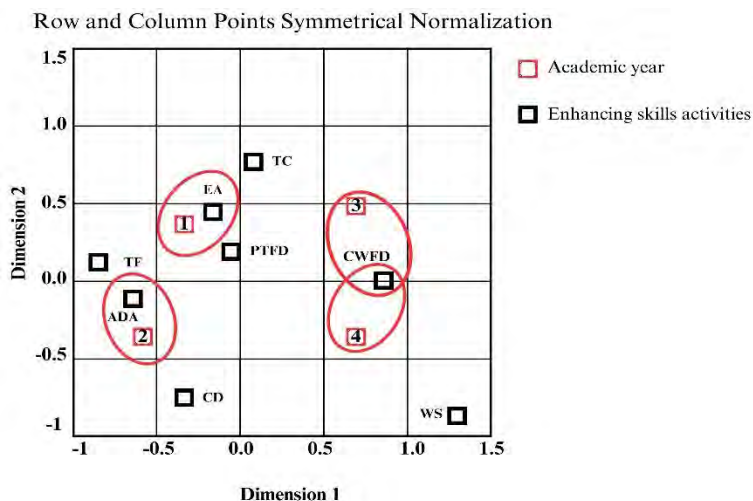ADFC = Ability assessment to design food decorations before class

Figure 2. Correspondence diagram between the academic year and activities to enhance art skills

for food decoration

EA = Exhibition activities

ADA = Artificial decoration activities

CWFD = Culinary workshop and art of food decoration

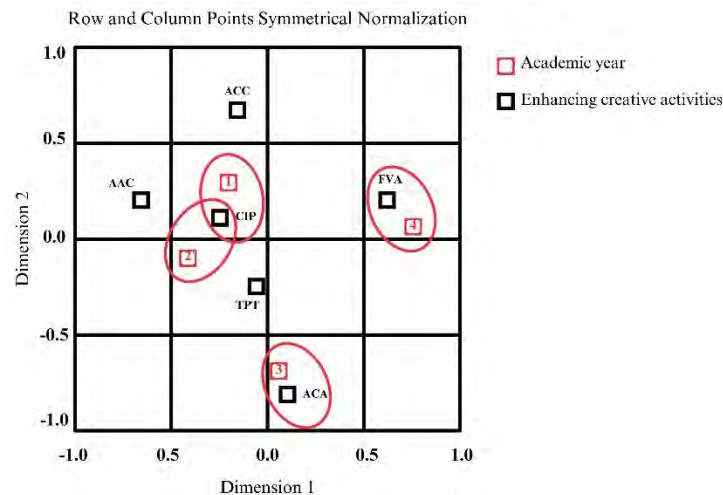Row and Column Points Symmetrical Normalization

Figure 3. Correspondence diagram between the academic year and activities to enhance creativity

for food decoration

CIP = Create images from points

ACA = Art camp activities

FVA = Food value added through the art of plating and photography

From Figure 1, it was possible to divide the relationship between the variables in the year and activities to enhance knowledge for food decoration among the students into 4 groups. The first group, 1st year students, relates to an analysis of food decoration design (AFD); the second group, 2nd year students, relates to the fundamentals of food decoration (FFD); and the third group, 3rd year students, relates to visual elements and principles of art in food design and decoration (VPD). The fourth group, 4th year students, relates to the ability assessment to design food decorations before class (ADFC).

From Figure 2, it was possible to divide the relationship between the variables in the year and activities to enhance the enhance the art skills for food decoration of the students into 3 groups. The first group, 1st year students, relates to exhibition activities (EA); the second group, 2nd year students, relates to artificial decoration activities (ADA); and the third group, 3rd and 4th year students, relates to culinary workshops and the art of food decoration (CWFD).

From Figure 3, it was possible to divide the relationship between the variables in the year and activities to creatively enhance the food decoration of students into 3 groups. The first group included 1st and 2nd year students who relate to creating images from points or dots (CIP); the second group was 3rd year students related to the art camp activities (ACA); and the third group was 4th year students related to food value added through the art of plating and photography (FVA).

4. Discussion

The relationship between the academic year and food decoration, knowledge, and enhancing activities revealed that first-year students are primarily concerned with the analysis of food decoration design (AFD). This could be due to the students' initial interest in analyzing techniques or design processes prior to their practical implementation in the food decoration study. This is in line with the process of integrated learning management in STEM education during the early stages of learning. Learners will search and analyze to identify problems and develop better skills (Kwon et al., 2021). While Yin et al. (2020) have demonstrated that incorporating performance analysis activities into early learning stages can enhance learners' knowledge and understanding, fostering the development of performance design skills and thinking habits that they can gradually incorporate into their work, the second group, the 4th year students, underwent an ability assessment to design food decorations before class (ADFC). This was likely due to the fact that they completed practical courses and training in the food service industry during their 4th year of study, as mandated by the curriculum. Therefore, students seek to learn how to evaluate their work in order to enhance their performance and prepare for future work (Hill & West, 2019). Taneri & Dogan (2021) concur, stating that fourth-year students view analytical skills in design as crucial for comprehending tasks and distinguishing differences in design. The third group, 2nd years student level, had a

relationship with fundamentals of food decoration (FFD) because students have basic knowledge from the art and principles of cooking in the past year, they are interested in applying the knowledge gained to decorating the food and make food more attractive to consumers, in line with the concept learning according to the theory of Benjamin S. Bloom, which mentions the cognitive domain, is the behavior of the brain, about intelligence, thinking, ability to think of learners when having knowledge, memory and understanding of what learners have studied after that, the learners will have the need to apply that knowledge to the real situation (Eisner, 2000 ; Forehand, 2010) and the fourth group, 3rd years student, related to visual elements and principles of art in food design and decoration (VPD), because of students studying food decoration subjects wanted to learn visual elements. Krachodnok (2010) asserts that learners must apply and synthesize their theoretical art knowledge with the art of food decoration to showcase the distinctiveness of food design principles.

The relationship between the academic year and art skill enhancement activities for food decoration found that the first-year student had a relationship with exhibition activities (EA). There is mainly theoretical learning, and there is a need to present knowledge in a different form for easier understanding, in accordance with Zakaria et al. (2019), who point out that applying art-based program learning to students is more effective than the conventional model applied that leads to the acquisition of cognitive learning outcomes in students. Additionally, the communication system of messengers, who aim to convey the content they understand to the audience, closely links exhibition management (Chuensukkasemwong, 2017). The second group, consisting of 2nd year students, developed a connection with artificial decoration activities (ADA), likely due to their previous internships in the food service industry, such as in restaurants or hotels. As a result, all of them realize the importance of practicing creative arts to create food decoration pieces. Mohanty et al. (2022) highlighted that the kitchen experiences and customer needs shape the creativity and innovation of chefs in food preparation. The culinary workshop and the art of food decoration (CWFD) attracted the third group of 3rd and 4th year students, likely because they wanted to apply the theoretical knowledge they had previously acquired to the practice of dish decoration. This allowed them to express their artistic talents and hone a variety of practical skills. Therefore, as students' progress to higher years of study, teachers should organize learning support activities that allow pupils to demonstrate a wider range of abilities. These activities, as suggested by Charmaz (2015), should reflect the lessons and learning of the students. Teachers should provide an environment that encourages learning, demonstration, and participation, which includes assessments with complex analytics (Paiva et al., 2022).

Relationship between academic year and creative food decoration enhancement activities. The first group, consisting of 1st and 2nd year students, demonstrated a strong connection with the create images from points activity (CIP), likely due to their early exposure to food decoration and their foundational knowledge of art from their previous high school education. This draws attention to the activity of creating images or new patterns from dots because dots are the basic artistic elements most easily used by the food industry to create works of art. Conversely, dots could attract and hold the attention of customers (Yetisen et al., 2016). However, Unilever Food Solutions (2023) discussed the basic principles of food decoration used by most Asians, which include the use of dots as elements that can form shapes on the plate, such as adding sauce to make the dish more attractive. Second, the association of 3rd year students with the art camp activities (ACA) likely stemmed from their open learning style and interest in learning beyond the classroom, which led to the development of ideas and skills that aligned with Lee et al. (2020) pointed out that organizing art learning activities through camps is a learning management method that can increase knowledge and understanding of creative and social skills arising from the diversity of members participating in the activities. The third group, 4th year students, was related to food value added through the art of plating and photography (FVA), probably because students had knowledge of visual arts and cooking, so they wanted to present their food in various forms to create great satisfaction for consumers, which corresponds to Javed et al. (2021). When a restaurant serves beautiful food, it influences the behavior, intentions, and satisfaction of its customers, leading them to consider taking food photos for online distribution.

From the results of this study, conclusions can be drawn to use as a guideline for enhancing knowledge and food decorating skills for organizing teaching activities that are suitable for students at Rajamangala University of Technology Phra Nakhon. Additionally, educational institutions that offer cooking classes may find this to be a useful guide for designing activities, as illustrated in Table 4.

Table 4. The guidelines for enhancing knowledge and proficiency in food decoration skills

Activities	Year	Activities	Meaning and guidelines
Activities to enhance knowledge for food decoration	1	Analyze food decoration design	Methods of presenting or decorating food based on issues such as food aesthetics, techniques, creativity, themes and concepts, culture, and audience response.
	2	Fundamentals of food decoration	Activities that include the activities encompass learning color theory, shapes, outlines, knife skills, food decoration techniques, conceptualization techniques, the study of cultural influences, and practical application.
	3	Visual elements and principles of art in food design and decoration	Activities to teach the placement of art elements on food plates include learning balance, unity/harmony, emphasis, rhythm, and proportion.
	4	Ability assessment to design food decorations before class	Activities Pre-class assignments that include: design brief, Research the concept, sketch the idea, list the ingredients, and reflect on the components of their design concept.
Activities to enhance art skills for food decoration	1	Exhibition activities	Activities aimed to developing art skills for food decoration through participation in a food exhibition provide inspiration, technical knowledge, food industry insights, new networking opportunities, and cultural appreciation.
	2	Artificial decoration activities	Activities to develop art skills related to basic knife skills leading to cutting and decorating food into natural or creative shapes, such as fruit and vegetable carving.
	3 4	Culinary workshop and art of food decoration	Activities aimed to developing art skills are related to Learn the fundamentals of food styling, techniques for garnishing and decorating dishes using edible ingredients, tools or utensils, and equipment commonly used in food decoration to please customers.
Activities to enhance creativity for food decoration	1 2	Create images from points	Food design involves points and the use of points. The process also includes the ability to strategically place dots on the plate. The dots are placed in accordance with the planned design, which could be a geometric design, a floral pattern, or something else entirely. For example, a cake decorating activity.
	3	Art camp activities	Creativity development activities involve an interdisciplinary learning approach that combines cooking skills with creative food presentation, including learning basic cooking techniques, carving vegetables and fruits, and applying decorative techniques. Participants engage in cooking challenges that revolve around a specific theme or ingredient, create innovative food recipes, participate in food photography workshops, and engage in activities that foster opinion exchange and innovative thinking.
	4	Food value added through the art of plating and photography	Activities to promote food creation by presenting beautiful images that appeal to the senses and preferences of customers include food decoration, presentation, and serving that enhance visual appeal. It shows that the food is of good quality and promotes sensory perception of taste. It also incorporates the use of photographs to showcase the freshness, beauty, and appearance of the food. Interviewing food business operators can enhance this value-added activity. The training program encompasses the creation of public relations materials that highlight the aspects of food excellence.

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