Evaluating effective culinary learning of food and beverage department students at technology universities

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ABSTRACT: The objective of this study was to evaluate the effective culinary learning of Food and Beverage (F&B) students at technology universities. A questionnaire of 37 items with normal scaling was applied. Using factor analysis, the construct of competence was collected for five areas, including: learning attitudes, study habits, learning methods, resources application and learning self-review. The higher constructs of effective learning ability were learning attitude, learning methods and learning self-review; however, study habits and resources application scored lowest for student-learning abilities. Students, who were culinary certified, had significantly higher scores in learning methods. Regression analysis showed that learning attitudes and study habits were positive constructs, but other constructs were unrelated to learning satisfaction.

INTRODUCTION

Taiwan's overall economic development has brought with it rapid development of tourism and hospitality industries. Naturally, vocational education must be responsive to these trends. Ensuring technically proficient hospitality education can produce qualified hospitality professionals in the market; therefore, it is understandable that hospitality education has become one of the prominent focal points in Taiwan's vocational training. The hospitality industry, in particular, uniquely combines labour-intensive and technology-intensive aspects; it can safely be said that adequate human resources and talent easily contributed 90% or more to success or failure in the hospitality industry [1].

There remain urgent and important unmet demands from society for skilled production chefs. Lin noted that teachers, students and industry all agreed it was imperative to expand hospitality course offerings and departments in response to growing social demands, ensuring hospitality departments could adequately provide a steady source of human resources for the hospitality service industry, while improving hospitality service quality as a result of a better educated workforce [2]. Learning is essentially a psychological process that involves personal cognition, understanding, memory, motivation and other emotional factors, which are deployed throughout one's learning environment. That, in itself, constitutes a very important factor [3]. *How to learn* reflects a multidimensional holistic learning concept involving effective learning tactics, as well as learning strategies, including cognitive, metacognitive and resource management learning strategies [4].

Successful learning strategies to ensure productive learning outcomes assure learners not only appreciate *knowledge of the what*, but also an *understanding of the why*. Therefore, confidence in how the brain works and effectively processes and transmits information, combined with effective techniques for reprocessing that information in conjunction with the acquisition of knowledge, have become the critical concepts underlying the concern with how to learn; which can also be designated effective learning.

Currently, students enrolled in higher education hospitality courses must participate in a curriculum that overemphasises theoretical discussions, but in the quest not only for *knowledge of the what*, but for an *understanding of the why*, an appreciation of theory should be gleaned through applied learning resulting in the development of students' abilities to resolve real-world problems [5]. The aims of this study were to: 1) develop the constructs for the factors that pertain to effective learning in F&B students; and 2) detect the self-evaluation ability of effective culinary learning for hospitality students.

METHODOLOGY

A questionnaire of the conception of professional competence was developed and guided by the results of literature review, interviews and research team discussions [6]. The research team working on this project drafted a total of 40

indicators. One hundred and fifty (150) questionnaires were distributed for the purpose of pre-testing (sample 1), and 135 valid questionnaires were collected to analyse.

The author used skewness, extreme value, inter-item correlation and factor loading to analyse the item quality. Following revision from the pre-testing, the questionnaire and the 40-items in it were appraised. The author used principal axis factoring with a fixed number of factors, in conjunction with oblique rotation, in order to extract factors from each competence construct. Items with a factor loading over 0.4 remained. Factors with eigenvalues greater than 1 were reported in the final factor structure. However, three items were detected using item and factor analysis. The five constructs: learning attitude, learning method, learning self-review, resources application and study habits were built from factor analysis.

This study used a second sample (N=1,009) to determine the stability of the relationship between measurement variables in the five constructs. To collect data, questionnaires were distributed to hospitality students in their second-year, third year and to seniors. In total, 744 valid questionnaires were obtained, which equalled a valid return rate of 73.7%. Items in all scales were rated using a four-point Likert-type scale, ranging from 1 (strongly disagree) to 4 (strongly agree).

The two scales used in this study pertained to the following areas: the first part was effective learning including five sections and the second part was demographic characteristics and learning performance satisfaction. The learning performance satisfaction included five items. Demographic characteristics, including gender, grade and cooking certification, were gathered.

The collected data were analysed using the Statistical Package for the Social Sciences (SPSS) version 14.0. Cronbach's alpha was applied to test the reliability of the factor groupings. The socio-demographic characteristics and the ranking of the construct of competence were summarised by descriptive statistics. Finally, the t-test and ANOVA were adopted to test the differences between items on demographic characteristics. Regression analysis was undertaken between professional competence and satisfaction of learning.

RESULTS AND DISCUSSIONS

The author developed the construct of competence of five constructs: effective culinary learning, including learning attitude, learning method, learning self-review, resources application and study habits. Both exploratory and confirmatory techniques were applied sequentially to different samples to assess reliability. The Cronbach's α values of each construct ranged from 0.752 to 0.851, which indicate that the five constructs in effective learning have good internal consistency. The first-ranked construct was learning attitude, with a mean value of 3.10. The second-ranked construct was learning method. The lower construct was study habits (Table 1).

The socio-demographic characteristics show that females were higher in competence than males, and most of them were third year and senior students. Only 11.4% of the students had no culinary certification, and over 50.4% of the students had more than two culinary certificates. Table 2 presents the impact of the five independent variables on satisfaction of learning performance. It was observed that the learning attitude and study habit variable had beta coefficients that were statistically significant ($p<0.05$). These factors explained 12.6% of the variance. The students with culinary certification scored higher in learning attitude and learning method (Table 3).

Maribeth and Jill argued that *how to learn* really refers to an efficacious and efficient attitude, signifying proper deployment of metacognitive understanding and skills to ensure a clear awareness of what one has learned and the concomitant ability to apply this learning and practice, while exercising appropriate self-monitoring [7]. Therefore, the formation of study habits in the university will affect future developments in the culinary field.

Chiou and Yang provided a notable exception as they found that in hospitality technical proficiency courses, student acceptance was higher for proficiency course instructors than for theory-based teachers; and that co-operative peer-mediated learning in technical proficiency courses was notably conducive to learning outcomes for students, positively influencing learner progression and future potential [8]. Use of a variety of teaching methods may ensure greater efficacy in student learning outcomes; and use of peer-mediated small group co-operative learning, along with team portfolio course evaluation methods, should facilitate better group learning outcomes [9].

Studies by Bruffard, Boisvet, Vezeau and Larouche [10] and Greene and Miller [11] found that learners with clear objectives will more commonly deploy metacognitive strategies resulting in more effective learning; hence, the development of appropriate appreciation for objective formulation skills will result in the development of more efficacious learning behaviours.

For a production chef, the ongoing acquisition of updated professional culinary skills remains a limitless endeavour of lifelong learning and, thus, it is only through the acquisition of self-directed independent learning skills, fully cognisant of one's own learning limitations and strengths, that one can become adequately responsive to this ever-changing society through continual improvement of one's professional competency. Carnell and Lodge advocated the

transformation of learner beliefs from an emphasis on performance orientation to those of a learning orientation, reflecting the stalwart belief that sustained assiduous effort can bring success, resulting in the betterment of one's individual skills [12].

Table 1: The culinary competence factors of hospitality students.

Factor (Reliability Alpha)	Factor loading	Eigenvalue	Variance explained	Mean
Factor 1: learning attitude (α=0.843)		12.007	10.633	3.10
I think that it is useful for me to take culinary classes.	0.581			
I hope to share my culinary skills with others.	0.620			
I hope to teach culinary skills to others.	0.568			
I think learning in a culinary class is very interesting rather than only getting a good grade.	0.404			
I hope to apply culinary knowledge in my life.	0.486			
I hope to apply the core concepts I learn in culinary class.	0.512			
I like to write and review the notes when I finish class.	0.419			
I am enthusiastic about culinary class.	0.635			
I like to understand the contents and outlines before learning.	0.446			
I like to imagine what one's own success looks like.	0.368			
Factor 2: study habits (α=0.851)		2.262	10.471	2.77
I am in the habit of organising study materials.	0.434			
I am able to concentrate in culinary class.	0.444			
I avoid nervousness when I have a test in culinary class.	0.485			
I overcome pressure when I learn in culinary class.	0.455			
I bring up problems and ideas when I attend culinary class.	0.518			
I have confidence that I can get a good grade in culinary class.	0.484			
I have doubts and re-check the textbook for accuracy.	0.506			
I am confident that I can finish my goal on schedule.	0.498			
I review and handle the quiz well.	0.604			
Factor 3: learning method (α=0.804)		1.604	8.820	3.01
I am able to relax when I feel nervous.	0.363			
I analyse and improve upon any drawbacks when I am learning in culinary class.	0.465			
I ask classmates and teachers when I have a culinary question.	0.392			
I am encouraged when I pass a test or receive certification.	0.416			
I am able to obtain more information to understand the texts in the classes.	0.516			
I am able to find the relationship among the various concepts.	0.558			
I always think of questions when I attend culinary class.	0.515			
I record the information in culinary class.	0.393			
Factor 4: resources application (α=0.752)		1.514	7.344	2.79
I use the video to obtain more culinary knowledge.	0.438			
I use technology tools to help my culinary learning.	0.373			
I am able to use the Internet to obtain information to solve culinary questions.	0.566			
I use the cooking lab to practise my culinary abilities.	0.465			
I review my schedule to check my learning performance.	0.717			
Factor 5: learning self-review (α=0.763)		1.244	5.394	2.87
I am able to detect my culinary learning abilities myself.	0.354			
I am able to encourage myself when I feel depressed.	0.404			
I can practise pre-testing by myself.	0.472			
I am able to review the class content and learning performance step by step by myself.	0.543			
I can discover the relationship between theory and practices.	0.464			

KMO=0.907 p=0.000

Table 2: Culinary effective learning as predictors of the satisfaction of learning.

Variable	Beta Coefficient	Standard error	Standardised Beta Coefficient	t-value	Significance
Learning attitude	0.411	0.108	0.213	3.790	0.000
Learning method	0.134	0.123	0.070	1.084	0.279
Learning self-review	-0.063	0.105	-0.037	-0.600	0.549
Resources application	-0.052	0.085	-0.032	-0.608	0.543
Study habits	0.302	0.096	0.182	3.149	0.002

Note: Multiple R=0.355; adjusted R^2=0.126; F=17.284; Significance F=0.000

Table 3: The differences between culinary certification and the constructs of effective learning.

Construct	Culinary Certification	N	Mean	SD	F value	P value	Scheffe
Learning attitude	0) No certification	85	2.93	0.462	4.996	0.000**	0<2,3,4
	1) With 1 certification	284	3.08	0.359			
	2) With 2 certifications	180	3.15	0.390			
	3) With 3 certifications	121	3.13	0.368			
	4) With 4 certifications	59	3.18	0.401			
	5) More than 5 certifications	15	3.13	0.392			
Learning method	0) No certification	85	2.85	0.456	2.422	0.008*	0<2,3,4
	1) With 1 certification	284	2.98	0.368			
	2) With 2 certifications	180	3.06	0.393			
	3) With 3 certifications	121	3.03	0.352			
	4) With 4 certifications	59	3.08	0.374			
	5) More than 5 certifications	15	3.07	0.504			
Learning self-review	0) No certification	85	2.74	0.494	3.547	0.004*	
	1) With 1 certification	284	2.82	0.401			
	2) With 2 certifications	180	2.92	0.431			
	3) With 3 certifications	121	2.90	0.412			
	4) With 4 certifications	59	2.96	0.397			
	5) More than 5 certifications	15	2.87	0.608			
Resources application	0) No certification	85	2.71	0.479	2.237	0.049	
	1) With 1 certification	284	2.74	0.461			
	2) With 2 certifications	179	2.82	0.446			
	3) With 3 certifications	121	2.86	0.477			
	4) With 4 certifications	59	2.80	0.413			
	5) More than 5 certifications	15	2.96	0.664			
Study habits	0) No certification	85	2.66	0.511	3.900	0.002*	
	1) With 1 certification	284	2.72	0.464			
	2) With 2 certifications	180	2.77	0.432			
	3) With 3 certifications	121	2.87	0.452			
	4) With 4 certifications	59	2.85	0.431			
	5) More than 5 certifications	15	3.01	0.581			

*$p<0.01$ **$p<0.0010$

CONCLUSIONS AND SUGGESTIONS

The learning attitude dimension had the highest scaled score in students' self-evaluation. Male students scored higher in learning abilities in resources application and study habits. However, students with culinary certification seemed to score higher in learning attitude and good method. Regression analysis showed that culinary attitude and study habits had a positive effect on satisfaction for learning performance.

As culinary educators move into the 21st Century, they will need to continually attempt to create learning environments for their students that will raise students' level of competence, and prepare them for future success in their field of expertise. Hospitality education is designed to prepare students with the professional knowledge and skills to successfully enter the industry. A university education is not merely concerned with the transmission of knowledge, but also with imparting a mature appreciation of how to learn, instilling higher order cognitive abilities and ultimately ensuring successful practical application of the acquired learning strategies.

Teng found that the factors exercising the greatest influence on student satisfaction levels were course offerings, teaching, and results along with career placement and planning guidance, specifically noting that schools needed to enhance the learning opportunities available to their students to ensure their suitability for jobs in their future workplaces [1]. Pinquart, Juang and Silbereisen found that important mediator variables for later success in the workplace included student self-efficacy and work satisfaction levels; therefore, schools should enhance their delivery of academic skills and improved personal efficacy so as to further assist students in their successful transformation into the workplace [13].

If students have a weakness in any domains of factors of learning, they must make plans and efforts to improve on it. Hospitality educators can help overcome the learning problem by providing all potential tourism and hospitality students with an extensive overview of the types of career available in the industry and the working conditions. The limitation of this study was the use of self-evaluation by students and a sample of students only from a technology

university. Therefore, the generalisations of this study will be restricted. Future research could expand the population to include other general universities and students to compare the differences between food and beverage students.

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