EVALUATING STUDENT PERFORMANCE IN FOODSERVICE / CULINARY LABORATORIES

BY

Carl A. Miller

A thesis submitted to the Graduate School

in partial fulfillment of the requirements

for the degree of

MASTER Of SCIENCE:

Family and Consumer Science

Major: Family and Consumer Sciences
Concentration: Hotel, Restaurant & Tourism Management

NEW MEXICO STATE UNIVERSITY

LAS CRUCES, NEW MEXICO

JUNE 2019

Carl A. Miller

Candidate

Master of Science: Family and Consumer Science

Major

This Thesis is approved on behalf of the faculty of New Mexico State University, and it is acceptable in quality and form for publication:

Approved by the thesis Committee:

Dr. Keith Mandabach

Chairperson

Dr. Dawn VanLeeuwen

Committee Member

Dr. Elizabeth Stringam

Committee Member

ACKNOWLEDGEMENT

The path of completion to my thesis and to achieving the milestone of a master's degree in my life has been a humbling one. This reward could not have been attained if there were not help and support from many special individuals. This is the culmination of a reward that was not just for myself but is also one that has been shared with my son, John, who was nine when I started the journey, and is now fourteen. I am grateful to him for being so understanding. Through all of this we have both realized that learning does not stop at a certain age, but rather is a continuous affair that allows us to pass on the experience.

I must also praise and thank my advisor, Dr. Keith Mandabach, for his commitment, care, attention to detail, and extreme patience in the completion of my thesis. Furthermore, regarding the other members of my thesis committee, Dr. VanLeeuwen and Dr. Stringam, thank you for your time, support, and input that have made this possible. To my committee, I have the utmost appreciation for all your support and work in providing me with the subject and information for the purpose of my research and completion of this thesis document. I would also like to thank you for allowing myself and my work to evolve and influence those around me, all in the effort to improve upon our ability to promote and guide future generations of culinarians.

Finally, I am thankful to mom for always be there and being sympathetic to my efforts to move forward with my education.

ABSTRACT

EVALUATING STUDENT PERFORMANCE IN FOODSERVICE / CULINARY LABORATORIES

By

Carl A. Miller

BY

Carl A. Miller, BS

Master of Science:
Family and Consumer Science

NEW MEXICO STATE UNIVERSITY

LAS CRUCES, NEW MEXICO

June 2019

Dr. Keith Mandabach

This non-experimental study examines the assessment of student performance in foodservice/culinary arts laboratory classes. The study gathered responses from administrators, administrators with teaching duties, and faculty about who creates, facilitates, and assesses the information from standardized grading (rubrics) utilized to evaluate students in culinary laboratory classes. Specifically, the study examined if there were significant differences in responses, by position, to research questions focused on laboratory assessment. The study examined data gathered through an online survey from educators working at postsecondary institutions with culinary programs that have been accredited by, and utilize standardized competencies established by, the American Culinary Federations Educational Foundation.

Nearly 84% of the respondents had teaching responsibilities. A total of 74 respondents had an evaluation system in place, while 7 responded that a system is used in some classes. The only research question showing a significant difference ($p=0.0078$) was whether faculty are allowed to develop their own rubrics for use in laboratory classes. Overwhelmingly, respondents reported that students had opportunities to respond to the assessments. The assessments used were reported to be effective in determining mastery of competencies and learning objectives (82%), and in curriculum revision (84%). Interesting qualitative responses detail respondents' thoughts concerning the "best" and "challenging" things about the laboratory assessment process.

Key Words

Rubric
Assessments
Food Laboratories
Student Performance Evaluation
Culinary Education

TABLE OF CONTENTS

LIST OF TABLES

Chapter

LIST OF TABLES

Tables

Chapter 1

Introduction

This pilot study surveys culinary/foodservice educators, administrators, and staff about their assessment methods concerning student performance in culinary/foodservice laboratory classes, while also comparing responses to research questions, all organized by reported positions. The research questions for this study focus on whether culinary lab students are evaluated, whether evaluation rubrics are standardized, who develops the rubrics, on what areas are students evaluated, who performs the evaluations, how often the process is documented, and the extent to which students are able to respond to evaluation. There are also questions on the effectiveness of the process, whether the competencies meet industry standards, and whether the process assesses the competencies that are taught. Demographic questions are also included, as well as a qualitative question focused on the best and/or the most challenging aspect of the evaluation system. This exploratory study presents qualitative and quantitative responses from administrators, instructors, staff, and chefs from ACFEFAC-approved culinary programs about their methods of evaluating students in hands-on foodservice laboratory classes.

Culinary programs provide students with real-world employability skillsets (culinary competencies) that must be mastered through experiential learning in the culinary laboratory (Mandabach, 1998). The American Culinary Federation (ACF), founded in 1929, is the largest professional organization for chefs and cooks, as their slogan is “The Standard of Excellence for Chefs.” The ACF has always been involved in culinary education through apprenticeship, but in 1986 they developed a program to accredit culinary programs, which they established as the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC, 2018). Extensive required competencies were then standardized, and these competencies are no less than encyclopedic in that they cover a wide range of culinary knowledge and skills. The

program has become very successful, currently with 328 postsecondary and 137 high school culinary programs, including standards for Pastry programs.

The ACF attempts to keep competencies, outcomes, and expectations in step with current industry trends, and they are all revised regularly. Therefore, ACF Accredited Program graduates have the skills needed for employment, as current industry trends are included in the standards culinary schools must meet in order to become an ACF-accredited culinary program. The development of student competencies, on the basis of industry standards, is integrated into each activity that students master in the culinary laboratory (Harrington, Mandabach, VanLeeuwen, & Rande, 2004). Student performance in the laboratory is assessed by the chef instructor, in some manner of evaluation/assessment of performance content (Chandler, Webber, Finley, & Keith, 2006). The student may be able to respond to the assessment and take steps to meet the desired competency outcome because they have been given proper feedback (Hu, 2010).

If expected competencies, outcomes, and expectations are known, then the next step is determining the method of data collection for the purpose of assessing grades. The decision on whether to include other tasks and tests into the student assessment and grading is also part of culinary education. Some formative methods might include student research and writing focused on specific assignments that are based on topics that have relevant meaning or specific application to the laboratory experience. In addition, students also might be assessed using a summative method in which practical testing is performed in midterm and final examination in order to evaluate student knowledge and skills (Roche, Ware, & Ware, 2014). Such summative assessment might include daily laboratory performance as part of the total. Whether formative or summative, the assessment becomes more appropriate when it measures student ability in

performing specific tasks related to key industry learning outcomes and/or expectations, such as ACF standards.

Students should be aware of designated learning outcomes, because then they would know what is expected of them, and what methods and context they must use to master established skills or competencies. Assessment is how specific information is obtained that is part of some type of objective, learning outcome, or goal (Gareis & Grant, 2008). The outcomes are part of curriculum development, and classes are designed so that students have the opportunity to learn. Competencies are established, that when mastered, document the specific context attainment in a leveled step form (Bisset, Cheng, & Brannan, 2009). In the culinary arts, competencies are taught through real-world experience. Not only is it crucial to establish the outcomes, standards, and evaluation methods in relation to student learning, but pre-assessment before students begin the hands-on classes is also important. Methods of assessment can be summative, formative, or a combination of both (Gareis & Grant, 2008). Furthermore, rubrics, or multi-purpose scoring guides for student performance, usually take the form of a matrix that provides a guide for evaluating student performance for the instructor, and also act as a map to lead a student to successfully master the competencies (Wolf & Stevens, 2012).

The educational system in the United States tends to be mainly data-driven, and therefore culinary schools use student assessment and resulting grades as their data points. This study examines how, when, where, and by whom this evaluation and subsequent assessment occurs. Furthermore, any skills or knowledge that students might not have mastered is worked back into the course in order to more effectively meet and satisfy targeted competencies and expected outcomes. This has been shown to better enable students to work towards improving their performance (Wiliam, 2013).

Culinary/foodservice education programs consist of a combination of theory classes and hands-on experiential learning laboratory classes. Students learn to cook by cooking. This study seeks to understand the processes utilized to evaluate and assess student performance in the hands-on culinary/foodservice education component. The study asked administrators, staff, professors, and instructors of American Culinary Federation accredited programs about evaluation practices, and also asked respondents about their perceptions of the effectiveness of the process. Professional Culinary Education (PCE) is a relatively new field that has moved beyond the limited range of basic vocational training that merely aimed to produce entry-level foodservice workers with limited culinary knowledge and/or management training skills (Cheng, Wang, Yang, Kinshuk, & Peng, 2011; Hegarty, 2004).

Culinary/foodservice management programs are typically offered at technical and community colleges, or at public or private universities. Such programs were developed to meet the need in the foodservice industry for trained culinarians. The programs have a variety of exit points. For some the student might only want to complete the specific content of the class. Others are seeking a certificate that documents specific competencies. For others an associate, bachelor's, or master's degree might be the goal. While in the past, most students would be recent high school graduates, today many non-traditional students with a wide range of ages and life experiences are seeking career changes and attending culinary classes (Brefere, Drummond, & Barnes, 2008). The key ingredient in almost all effective culinary programs is a foundation of experiential, hands-on, competency-based foodservice laboratory classes. Culinary students read textbooks, watch videos, write papers and/or watch demonstrations by instructors, and they also learn by performing and mastering the skills and competencies necessary for success as a

culinarian (Roche et al, 2014). Thus, by its very nature, culinary education is different than most of the academic disciplines on the postsecondary campus.

Traditional academic classes assess student learning through a variety of means after focused content is delivered through lectures, readings, projects, videos, or whatever innovative approach instructors might implement. The assessment might be a test, or assignment of some sort, that determines whether the students have mastered the content. Technical or vocational courses focus on delivering specific skill sets based on workplace competencies that are job-specific. The use of experiential learning focuses on delivering content that allows students to develop specific employability skills, and students are assessed on how well they master the competences needed to perform their jobs in their future professions. In addition to assessed culinary competencies, there are other workplace skills that are included in assessment, because other technical and organizational abilities are also considered. For example, in the culinary laboratory classroom, students are also assessed on their timeliness, appearance, and cleanliness, as well as on their recall of culinary history, food science, and cooking theory that they were tested on through written exams. Many of these factors are not typically assessed in traditional academic measurements of grading (Heaviside & Faris, 1994).

Desired goals are established using industry standards that detail the competencies that must be mastered in order to be successful in the culinary field. Next, assignments—including rubrics—are designed that allow students to work towards mastering these required competencies with clear-cut assessment standards. After their design, the assessment process is integrated into the course work. Student assignments related to performance are evaluated using a basic rubric, as this process facilitates mastering the competencies. One of the questions for this study is based on how these standards are communicated to the students, and how the actual

assessment process works. Sometimes, vocational students are taught without knowing performance standards for the subject matter (Shavelson, 2007).

Culinary programs that provide real-world employability skillsets for students in their laboratory experiences tend to structure the learning progression in a stepped fashion, as each mastered skill leads to another. Students are usually taught sanitation and safety first, then equipment and basic knife skills. Students usually read about food preparation/production methods, and also view a demonstration and/or a video, and thus understand the competencies they need to demonstrate when they actually prepare the food. This occurs under the supervision of a chef instructor. The students must demonstrate their mastery of the competencies needed for preparation in the laboratory. Their performance in the laboratory is assessed, and at some point they receive feedback on their performance. One of the questions for the study focused on how this feedback is provided, and whether students are able to respond to the assessment and take steps to meet the desired competency by addressing any shortcomings provided by proper feedback. This is an important component of vocational education (Shavelson, 2007). Culinary programs and faculty provide students with achievable criteria prior to hands-on laboratory experience. As mentioned, it is hoped that the mastered competencies should consistently reflect the skills needed by the industry, as one of the questions for this study also focused on that aspect.

Purpose

The purpose of the study is to provide culinary educators with information on the current state of assessment in laboratory classes, to provide information for readers about assessment theory and practice, and to create a dialogue about the importance of assessment. As a result of the study, it is hoped that participating educators were prodded to examine the topic and improve their assessment practices. Furthermore, it is also hoped that those in different teaching positions

might have a better understanding of how colleagues—such as administrators, including administrators with teaching duties, or faculty assessors—view the assessment process. Administrators are essentially the leaders of assessment. They are involved in the assessment process as instructional leaders, and administrators have gained an understanding of what knowledge, skills, attitude, and proficiencies will be assessed—and on what basis—while working towards a common vision that should result in valued educational outcomes (Cizek, 1995). Foodservice/culinary educators are extremely dedicated, but many have transitioned to education from the foodservice industry, and therefore need to better understand the importance of a structured assessment process, as well as the theory and practice of assessment outside the culinary classroom.

Key Research Questions

Answers to research question will be analyzed with SAS (2011) protocol Exact Pearson Chi-Square to compare responses by reported position: Administrator, Administrator with Teaching Responsibilities, and Faculty.

1. Does the culinary/foodservice program have a system in place to evaluate student performance in foodservice laboratory classes?
2. Are faculty allowed to develop and use their own standardized form (rubric) to evaluate student performance in laboratory classes with appropriate approval by administrators?
3. Does the student have the ability to respond to the instructor's student performance evaluation?
4. Is the student performance evaluation effective in determining whether students have mastered competencies and outcome objectives for the culinary/foodservice program?

5. Are the student performance evaluations helpful in evaluation and revision of the curriculum?
6. Who had input on establishing the student performance evaluation form?

Chapter 2

Overview and History of Culinary Education in America

Historically, American professional culinary education (PCE) has been different in many ways from popular cooking schools—such as Fannie Farmer, designed more for home cooks (Mandabach, 1998). PCE, in the early-20th century to post-WWII days, attempted to integrate traditional apprentice-to-journeyman training into foodservice laboratories, driven by professional chefs and cook associations, as well as by culinary unions and the public-school systems, as vocational education training for youth and adults (Mandabach, 1998; VanLandingham, 1995). Changing the status and image of chefs from domestic workers to professionals, and the need for trained culinarians, has led to expanded industry-school partnerships and the establishment of a systematic approach to culinary education, eventually leading to the creation of technical and community programs in every state in the USA (Brown, 2003; Hertzman & Stefanelli, 2007; Mandabach, 1998).

Since 1985, the ACF has utilized established standards, evaluation systems, and competency-based curricula, in recognizing accredited post-secondary and secondary school culinary programs with systematic on-site evaluations of facilities (Cheng et al., 2011). The study of the effectiveness of culinary education and techniques is a developing discipline with a number of studies examining a variety of topics, including but not limited to: the quality and value of PCE (Hertzman & Maas, 2012; Hertzman & Ackerman, 2010; Hertzman & Stefanelli, 2007), the examination of the control and cost processes of PCE (Muller, VanLeeuwen, Mandabach, & Harrington, 2009), the institutionalization of culinary education and curriculum (Harrington et al, 2004), the use of reflection and creativity to improve quality in PCE (Hegarty, 2004), the effects of environmental factors on creativity in culinary labs (Horng & Lu, 2006),

discovering culinary competency and innovative approaches to evaluating culinary competency (Hu, 2010), approaches to explain differences in structure across culinary education programs, (Harrington et al., 2004), the differences between industry and culinary educator opinions in terms of competency importance (Muller et al., 2009), and evaluating teaching effectiveness in food laboratories (Chandler et al., 2006). Harrington et al. (2004) completed a study reviewing control process techniques used by foodservice administrators and educators in the operation of foodservice laboratories. Sources of funding, purchasing procedures, cost controls, budget processes, and results accountability were all investigated. The results of the study indicate that many different foodservice industry control processes are utilized in the operation of educational foodservice laboratories. Control process techniques varied significantly between public or private, and 2-year or 4-year institutions. Future research considering institutional pressure impacts, control processes outside the scope of the current study, and the transferability of best practices in educational foodservice operations were also suggested.

Literature Review

One issue in culinary education in the U.S.A. may be that many of the administrators, laboratory instructors, and/or chefs responsible for curriculum, teaching and assessment in foodservice laboratories, all have little training in educational pedagogy or experience teaching outside of professional kitchens. Jooste (2007) found similar issues in a study of culinary studies in South Africa: “The greatest challenges in culinary studies were reflected in the complexity and multidisciplinary nature of this relatively undefined industry and field of study” (p. 240). Additionally, the study determined that educators should be provided with a far greater understanding of the curriculum teaching process, of the prospective industry expectation of students, and of what individual student expectations actually are. With a greater perspective on

all of those issues, assessments might better determine the level of student mastery of industry competencies in the laboratory. The study by Jooste (2007) also calls for the integration of secondary and post-secondary education.

Roche et al. (2014) published the seminal handbook *Culinary Educators' Teaching Tools*. They stated in that text's introduction that many culinary instructors "begin their culinary career with a considerable amount of subject knowledge but limited pedagogical training" (p. 11). The text details a step-by-step program including lesson plans, lectures, active learning, motivation and student engagement, facilitating discussion, assessment, grading, rubrics, technology in education, classroom management, and a primer of class activities. The section on rubrics includes a basic kitchen laboratory rubric that lists safe food handling, preparation techniques, professionalism/teamwork, and sanitation and safety. Another laboratory rubric to evaluate student performance in preparing a specific recipe includes mise en place, equipment selection, knife skills, applied cooking skills, finished product evaluation, sanitation, professionalism, and time management. The final rubric is designed to evaluate a specific product, Hollandaise sauce, on the basis of color, texture and consistency, seasoning and flavor, emulsification, temperature, and portion size and yield. All have suggested a scoring system would be a better indicator in student grading.

The authors provide ideas and techniques for planning, organizing, demonstrating, and managing the food laboratory portion of the culinary education process, stressing the importance of incorporating the competencies students need to master and how those competencies will be assessed. Clearly explaining and repeatedly stressing these expectations is important in helping students to clearly understand what they are expected to do in the laboratory and how they will be evaluated. Examples of additional lab production skill rubrics are provided, as well as

strategies for implementing formative and summative assessment on students. In addition, the authors explain "learning and understanding do not occur through experience alone but rather as a result of thinking and reflection" (Roche et al., p. 151). The importance of planning, managing and organizing the laboratory experience is stressed, and the authors suggest that while this may be time-consuming and difficult, it can assist in the delivery of a "professional, orderly and safe learning environment" (Roche et al., 2014, p. 151). Hertzman (2006) has performed extensive research on characteristics and quality indicators of associate degree culinary art programs in the United States by conducting extensive surveys of culinary educators and chefs who were members of the ACF. Hertzman's (2006) research determined that, statistically "programs required the hands-on laboratory classes Basic Cooking, Introductory Baking, Advanced Cookery, and Garde Manger" (p. 171). While chefs and educators valued "Food Service Sanitation and Safety, Basic Cooking, Food and Beverage Cost Control, Saucier, Advanced Cookery, and Introductory Baking more than management-oriented course" (Hertzman, 2006, p. 172). Two of the five courses were actually not laboratory classes, and the five quality indicators for a culinary program were determined to be: Sanitation of Kitchen Laboratories, Industry and Subject Experience of the faculty, Required Internship and Placement rates (Hertzman, 2006).

Student experience in culinary laboratories is one of the most discussed ingredients of culinary education. There is a vast amount of literature that attempts to describe how to become a chef, and most include a section on culinary education. Cooper (1997) in *A Woman's Place is in the Kitchen* researched the history of female culinarians, and discussed the importance of teaching young culinarians both on the job and in the classroom, after interviewing hundreds of successful chefs. Cooper (1997) believes that "all teachers share a passion for their craft, passion to teach and the passion to motivate young culinarians" (p. 125). The culinary educators that she

interviewed shared what they believed to be the most important factors for success in culinary labs. These factors included organization, psychology, communication, touching the personality, of the student and helping students to develop their own culinary style.

Another well-known resource on how to start a culinary career, by Dornenburg and Page (2003), details the skills necessary for a culinary career. In *Becoming a Chef*, Dornenburg and Page (2003) stress the importance of culinary history while chronicling famous chefs from Apicius to Nobu Matusha. They focus their discussion on the importance in discovering a passion for food, the selection of cooking school options, how apprentice programs can build a career, and the development of a cook. They also discuss the business of cooking, including operating a restaurant, traveling, being a lifelong culinary learner, preserving the past, and developing future trends. The book features anecdotes from well-known chefs that discuss the acquisition of skills, and the knowledge and leadership needed to become a successful chef. They also weigh in on the importance of culinary schools in developing hands-on experience in foodservice laboratories, and also in student-operated restaurants. A variety of tales from these chefs detail the importance of technique, and they also emphasize the need to improve awareness of what is actually occurring during the food preparation and cooking process. For example, Alice Waters, the well-known Oakland chef, states that "'the schools have gotten better […] the things you learn in cooking school are very important: how to clean up after yourself, how to care for and sharpen your knives'" (as cited in Dornenburg & Page, 2003, p. 71). Waters also stresses that you must acquire a certain familiarity with equipment and protocol (as cited in Dornenburg & Page, 2003). One finds this familiarity in the culinary laboratory, as the assessments that occur in that environment are designed to further develop and refine a student's culinary awareness.

Brefere et al. (2008) produced an excellent road map for those aspiring to be chefs, and they also briefly describe what students might expect in the food laboratory in *So You Want to be a Chef?* The laboratory performance evaluations that they discuss focus on how well students perform kitchen tasks common to all kitchen activities, and they also discuss how all of this is usually combined with academic classes that focus on financial reporting, computer skills, menu costing, and menu development. According to the authors, the laboratory portion of culinary education is the place where students learn to master the precise skills needed for a culinary career: "The hands-on, which is the passionate and creative part of your profession, compliments and motivates all facets of the work" (Brefere et al., 2016, p. 3). They also detail the educational requirements for different positions, and they include personal interviews of chefs from a wide variety of culinary careers.

Chalmers (2008) details 150 great jobs in her book *Food Jobs*. She believes that culinary school is important in gaining hands-on experience, and she also stresses that "to stay a heartbeat ahead of the competition means following food trends up with what is happening in all sectors of the food universe" (Chalmers, 2008, p. 267). Chalmers address a question not often discussed by culinary educators: Who are the students in culinary classrooms? According to Chalmers (2008), about two thirds of today's culinary students are of post-high-school age, and the remainder are career changers from a wide variety of professions. This is especially important to understand when one is evaluating these nontraditional students in the culinary laboratory, because they are accustomed to being evaluated in their former positions.

One of the areas used to evaluate students in culinary laboratories is managerial and leadership competency. A study by Riggs and Hughey (2011) compared culinary arts and hospitality students with hospitality professionals using the competing values framework (CVF).

The authors commented that "culinary students showed higher mean score differences for each of the managerial skills presented […] these being in the leadership roles of producer, broker and facilitator" (Riggs & Hughey, 2011, p. 115). The authors posited that culinary students in hands-on food laboratories are exposed to managerial skills and leadership roles even in their pre-professional education experience.

The World of Culinary Supervision, Training and Management (Chesser & Cullen, 2018) is a companion text to culinary laboratory classes, and offers lessons on the management component of the culinary world. This component, as well as team building, are often evaluated in the culinary laboratory assessment process, as students are often working in teams in the culinary laboratory where the importance of the soft side (interpersonal skills) of culinary arts is extremely significant. The book stresses the importance of organizing, team building, coaching, planning, communicating, delegating, empowerment, ownership, and also the all-important sanitation. Significantly, most culinary laboratory assessments include these components.

Carroll (2007), award-winning Executive Chef of River Oaks Country Club, and graduate of the Balsams Resort apprenticeship program and the Culinary Institute of America, provides a myriad of information in his inspirational book *Leadership Lessons from a Chef.* His many suggestions range from "what makes you tick?" to "did you listen the first time?" He believes in building an educational environment in the kitchen. This is not so much about turning an industry kitchen into a classroom, but rather is a refocus on providing culinary demonstrations, leadership meetings, topic-specific informational training meetings, and using distinguished visiting chefs as resources, all in the laboratory classroom. Carroll (2007) believes that every cook, just like every student, should constantly analyze the food they produce, as well as the food their colleagues or classmates are producing, and always ask the question "was it good

enough?" (p. 33). He suggests that his opinion as Chef is important, but it is also important for him to listen to the opinions of other people—including the students in culinary classes—in terms of their opinions on what went right and what might have gone wrong. This is a benchmark to which assessment in the culinary classrooms should aspire.

Another major issue in culinary education in the U.S.A. is that of creativity, particularly in terms of how creativity is impacted in culinary arts education food laboratories, as well as how or whether creativity is being taught. A Taiwanese study examined processes utilized in the culinary laboratory to increase creativity, as students were taught to prepare new complex dishes. The process began with a mystery-basket-type assignment. Students were given ingredients in order to prepare and develop an idea for the dish, using idea incubation and development in pre-lab brainstorming sessions. This was coupled with producing the actual dish in a laboratory session for assessment. There was no significant difference in the students' performance assessments, but a qualitative analysis found that students felt more confident and believed their performance had improved because of the creativity sessions (Horn & Lu, 2006).

With the view that culinary schools are currently structured under the model of a Master Chef training apprentices, the Otago Polytechnic Bachelor of Culinary Arts program in New Zealand has suggested moving away from that model in favor of a greater focus on design methodology and a curriculum that stresses culinary business and a more creative focus. In addition, Mitchell, Woodhouse, Heptistall, and Camp (2013), emphasize a "growing global awareness that we (culinarians) face in providing safe, sustainable and ethical food in an increasing population" (p. 183). The training for these goals is fast-paced, and at the same time attempts to build creativity. Hegarty (2004), at Dublin Polytechnic, has implemented a similar style of gastronomy and culinary education. This holistic approach encourages students to think

and act creatively and implies that culinary arts has a responsibility to provide quality and healthy foods that taste great, smell great, and look great.

Overview of Assessment

Student learning has always been at the root of higher education, yet it has been argued that course grades are not the best indicator of student success (Economist, 2012). As it is no longer acceptable for students to just retain and regurgitate information during testing, the student still must have the ability to demonstrate learned information, from time to time, throughout a course and program. Over the last twenty-five years, the academic movement in higher education has shifted more towards the measurable mastery of subject knowledge and the display of subject competencies (learning outcomes) (Baker, 2014; Ewell, 2002). This effort has created an active learning environment that establishes systems and procedures to identify the expectation of achievement for the students (Hertzman & Ackerman, 2010).

Learning outcomes are also related to learning satisfaction within the student. The results of student satisfaction are viable indicators of how effective an educator is in delivering course material, as well as of the effectiveness of teaching methods and the learning process experienced by students (Ko & Chung, 2015). In the interest of higher education stakeholders, there has been an increasing demand put upon teaching effectiveness, as well as on the accountability of student learning, often using student evaluations of teaching in assessing student learning (Baker, 2014; Ewell, 2002). Gagne (1962, 1970, 1973, 1985) points out that the use of learning outcomes addresses the issue of student readiness for the workplace. In addition, learning should be transferable to one's life and occupation (Scotland, 2006). In the more artisanal past, workplace competencies were learned through a hands-on approach, as the student was an employee essentially learning these skills and knowledge under the supervision of the

employer. Today, these skills are learned in a classroom setting from an instructor. In many cases, there is a disconnect between educators, course work, and what the industry wants and expects. There is a disparity between the required knowledge and skills, and the perceived knowledge and skills on a particular subject (Patah, Issa, & Nor, 2009), and this disparity also exists within the information that students themselves think is relevant. Student demonstration of learned information should lead to a resolution of this disparity and should essentially help to fill in the gaps in terms of missed information needed from the instructor (Wiliam, 2013). Furthermore, educators should have the ability to analyze student needs using teaching objectives, the delivery of material, methods of teaching, and the utilization of assessment data in order to teach students (Ko & Chung, 2015).

At the level of higher education, there is a level of conflict concerning the appropriate means of student evaluation and grading when contrasting traditional academic courses (critical thinking, reading, etc.) with vocational courses and workplace competencies (job-specific training, employability skills, etc.) that require shop/lab-work learning. Both types of courses do require some of the same competencies, but it is arguable that a greater emphasis on more technical and organizational competencies is more appropriate to real-world learning outcomes (Heaviside & Faris, 1994).

Grading practices by teachers rarely follow the exact measurement principles recommended in assessment textbooks (Allen, 2005; Frary, Cross & Weber, 1993). Studies have shown that two out of three teachers believe that the effort, conduct, and attitude of students should influence final grades (Allen, 2005). Instead of the grade being a function of information learned, it has become a function of many other variables. Simply put, it would appear that grades are often measures on how well a student lives up to a teacher's expectations of what

makes a good student, rather than existing strictly as measurements of a student's academic achievement in the subject (Allen, 2005).

Culinary programs require basic elements in order to deliver job successful-employees, and those elements require standards of knowledge and skills that are centered in a curriculum with appropriate learning material and set competencies used to assess students. The approach of student-centered, competency-based learning that reinforces employable knowledge and skills allows the student to be successful in the workplace (Moeller & Reitzes, 2011). Competency-based learning assesses the student before the training, then continues formative assessment throughout the course and program, while monitoring the progress of how a mastery of material is being met. The student requires feedback on their progress, and this information is used by the student and instructors in order to close the gap where additional training may be required (Moeller & Reitzes, 2011).

Assessment

At its most basic, assessment is how specific information is obtained that is in conjunction to some type of known objective or goal. Assessment helps to connect goals and/or objectives at a particular level. Within culinary arts education, assessment is used in measuring a student's strengths and weakness in an area or skill. Assessment is not just a way of measuring student learning, but it is a tool for student learning (Gareis & Grant, 2008). Students are required to perform tasks at a predetermined level in order to show that a specific knowledge and skill has been attained.

To have a good supporting assessment, there are certain key characteristics that every assessment is expected to have. The first characteristic is the presence of a clear purpose: Who will use it, how will it be used, and what type of information is required? The second is the

presence of defined targets: Is there a clear learning outcome, have sufficient levels of achievement been established, and does the assessment actually coincide with teaching? Third, there must be sound design: Does the testing match the outcomes, and are the measuring tools of sufficiently high quality? Fourth, there must be a sufficient level of effectiveness in communication: Is the feedback of assessment utilized for actual improved instruction and student learning, does the assessment practice reflect proper grading, and are students meeting the standards expected in the required outcomes? Lastly, a level of student involvement must be present: Does the utilization of assessments reflect student needs, do students understand the outcomes, and are students using the assessment for self-improvement and growth in learning? (Chappuis, Stiggins, Chappuis, & Arter, 2011).

The distinguishing feature of an assessment is that it requires a judgment process, as measurements are formed from interpretation and decisions based on values and assumptions. The measurement of an assessment depends on the value placed on the evidence. The interpretation of the value of evidence is accomplished through grading procedures and an analysis of the worthiness of the context (McMillan, 2000). Student assessment requires that the evaluation corresponds directly with the type of learning behavior that is being assessed, meaning that there must be a direct focus on a valid assessment by communicating a summary of student achievement in relation to knowledge within the subject. Procedures and the assignment of grades should accurately reflect student achievement.

A balanced assessment is based upon a scaled system of evaluation with each area requiring specific objectives and performance descriptions, including set examples at each level of achievement. The evaluation scale can be used to observe student performance in formal and informal assessment conditions. A basic example might include: needs significant instruction,

needs some instruction, needs work to be revised, and meets the basic demands of the set task (Bass & Glaser, 2004; Balanced Assessment, 1999).

Assessment is a means in which data is collected, and this data should be used to evaluate student thinking and learning progress within a subject, as well as a grade for a course. The purpose of assessment is the gathering of useful information on educational performance in relation to a student's level of achievement on the basis of specific goal-orientated tasks (Roche et al., 2014). Collection of this data is independently not always a determiner on exactly how a student performs, as judgment on attitude, skills, knowledge, understanding, and the demonstration of each of these aspects should be measured (Roche et al., 2014). Using a combination of each type assessment could lead to correctly and fairly measuring how a student is achieving the desired outcomes/goals of a subject being taught.

Assessment is best utilized in broadening instruction, as it supplies useful information concerning the student learning process, including what they have learned, what aspects of particular subjects are harder than others in the learning process, what students need next in the learning process, and also what methods and materials might be required in order to better capitalize on students learning. The instructor needs to know what information the students know, and where the students should be during a particular point in the lesson. In addition, there has to be a means for monitoring the progress of the students, in order to determine if the instructional program is working and if any adjustments are needed to increase the level of learning. Furthermore, assessment tends to reveal any shortcomings in the instructional program where the plan or program could be more effective (Fuchs, 1995).

All forms of assessment have both strengths and weaknesses, but it is through the melding of various approaches that professors can draw on the virtues of one to offset the

liabilities of another (Wolf & Stevens, 2012). Assessments that are effective and that supply feedback to the student can be motivating and tend to increase learning. They can enhance student achievement as well as the level of instruction in the classroom. As assessment is not just about the student, it informs the teacher about assignments, methods, and activities that are working or not working, as well as the extent to which the level of instruction is most appropriate. This is all about the student strengths and weaknesses, and how instruction might become more effective (McMillan, 2000). An assessment of skills tends to be easier than that of knowledge.

The use of assessment is a method of ascertaining whether a student is meeting the specified competencies of a program. These competencies should be detailed in the learning outcomes of the course, and imbedded in the delivery of set laboratory tasks and cooking techniques as students prepare food. Faculty then can measure/assess how well the students mastered the competencies. However, there is a level of difficulty in defining and evaluating the mastery of competencies consistently, as well as in effectively communicating to students their performance in laboratory (Hertzman & Ackerman, 2010).

Establishment of Assessment: Background and Standards

On September 22, 2014, the Joint Committee on Standards for Educational Evaluation adopted "Classroom Assessment Standards." These standards emphasized the use of a base framework in order to measure progress in meeting course goals. This allows more specificity in the structure of statistics, focused on feedback that occurs during the achievement process of meeting those course goals. This information provides data that directly connects student learning to the level of curriculum, instruction, and the assessment process that were used in attaining the learning objectives and end results produced by standard base grading (Block,

2015). Standard base grading leads to more specifically related achievements that meet course goals. This then directly links grade results to each of the processes of educating the student: curriculum, instruction, and assessment. It sets expectations for the instructor that evaluate how effectively information is transferred to students. In practicing proper Classroom Assessment Standards, the measured data is an indicator of student progress in achieving the intended learning outcomes. Such standardized assessment informs the instructor and administration personnel how effective the planning and delivery process of the course was, while also signaling the strong and weak points of instruction. These points can be reviewed, modified, reassessed, and compared.

Assessment Literacy

Assessment literacy can be summed up as a teacher's knowledge, skill, and wherewithal to construct and use relevant and dependable assessment instruments and techniques as part of the teaching process in order to develop student learning. The process of building assessments involves teachers developing objectives and learning outcomes that will lead to the fundamental design of instructional information. The assessment instrument would also be focused on how to administer, collect, and evaluate data. The assessment data should provide constructive student feedback for future student learning (Gareis & Grant, 2014).

Classroom Assessment Literacy

Classroom assessment literacy is the knowledge and skill needed to gather accurate information about student achievement as well as utilize the assessment process and its results effectively in order to improve that achievement (Chappuis et al., 2011). The assessment has to be trusted and utilized by the teacher. Furthermore, the data must be assessed on a regular basis, and it must be directly related to course material and classroom instructional goals. Teachers

have to develop the competency to design student-based assessments that effectively measure learning, and that provide specific examples of the objectives being evaluated. Teachers must also supply quick and appropriate feedback to students. Through the willingness of teachers and students to utilize disseminated assessment results, teachers can restructure learning activities and/or extend lessons in order to create better opportunities for students to meet objectives (Chappuis et al., 2011). Assessment has a direct relationship to instruction, on the basis of three fundamental roles: pre-assessment, formative assessment, and summative assessment. Formative assessment is where the instructor provides helpful criticism, while summative assessment measures the extent of knowledge acquired after the lesson and learning has taken place, and both lead to competency (Frary et al., 1993).

Pre-Assessment

Pre-assessment is a measurement of student knowledge about a specific subject before teaching takes place (Gareis & Grant, 2014). The use of pre-questions for the introduction of a new topic can indicate what information is required and can stimulate student recall of any prior knowledge, and therefore can contribute to improved learning. Also, using quizzing as support can decrease the likelihood of material being forgotten, and refocuses the attention towards material being exposed to students in the class (Pashler et al., 2007).

Summative Assessment

Essentially, summative assessment uses the evidence of student achievement in making judgments about student competence or program effectiveness. Summative assessment concerns student learning after a period of instruction (Gareis & Grant, 2014). In the application of specific questions on specific content, the instructor can help students to focus on a more complex understanding of selected material. This form of teaching directs student development

towards critical thinking and reasoning. This form of assessment can occur during any phase of the instructional process, even during independent study (Pashler et al., 2007). A student's ability to recall information from memory helps commit information to memory and lessens the chance of forgetting that information. When students respond to questions—whether in testing or during class instruction—the student practices the ability to recall specific information from memory. This type of learning, commonly known as the Socratic Method, can be assessed through questioning and understanding, and can effectively guide student learning and develop critical thinking abilities (Gareis & Grant, 2014).

Formative Assessment

Formative assessment concerns student learning as part of the actual teaching exercise (Gareis & Grant, 2014). Formative assessment aims to understand and support teaching and learning effectiveness rather than just grade students (Wolf & Stevens, 2012). The ability to reinforce information retention can be achieved through re-exposure to material, such as providing a quiz to assist students in remembering key information even longer and helping them to actively recall specifics. This directly promotes learning. This form of assessment also uses testing which can be utilized by the instructor in order to identify student mastery of subject matter and content that needs to be further studied (Pashler et al., 2007).

Formative assessment is how learning is done, as teachers and students practice using formal and informal processes of gathering evidence for learning, along with adjusting instruction to meet how students learn (Chappuis et al., 2011). The use formative assessment provides direct input for the teachers in order to amend and advance their instructional strategies, and it also gives effective feedback to students. Formative assessment has a direct effect on learning, as data suggests that feedback is a useful informational tool available for the teacher

and students to take control of and improve learning. Formative assessment data allows for reflection, and is therefore helpful for teachers in adjusting instruction to meet student needs, which promotes positive student support and learning behaviors (Frey & Schmitt, 2007). After the assessment findings are interpreted, this information determines whether student performance has met or not met the intended objectives. The exercise of evaluating data helps instructors to "recognize that their effectiveness is not defined on the basis of what they do as teachers but rather on what their students are able to do" (Guskey & Bailey, 2001, p 178).

Formative or curriculum-embedded measurements are created after establishing an end-of-unit assessment or outcome. An effective tactic is to insert assessments at regular intervals during instruction. This process tends to test the material that has just been covered without any regard to how the assessment relates to the rest of the unit (Bass & Glaser, 2004). In formative assessment, objectives are used to determine if the curriculum's specific outcomes were met, and whether the instruction best enabled the learning of the curriculum and lessons being taught. Formative assessment can also be used while learning is taking place, as this can happen through the use of a formal quiz or by informally asking questions to gauge the progress of the class or students (Frey & Schmitt, 2007).

Other Assessment Types

Objective Testing Assessment takes on a variety of forms in the assessment of knowledge as well as attitude, requiring short answers or lengthier written responses (Wolf & Stevens, 2012). The Student Portfolio Assessment is basically a collection of information about a student's knowledge, skills, and character (Wolf & Stevens, 2012).

Student Self-Assessment and Peer Feedback Assessment is where the students can productively assess themselves on many different levels, such as academic performance,

attitudes about learning, degrees of improvement, learning style, study habits, teamwork, ability to learn from feedback, and so on. Examples could include a variety of work samples from projects to exams, as well as other self-assessment information like a learning autobiography and photos of completed work. When students self-assess, they develop a deeper understanding of their own performance and the areas that need improvement. However, self-assessment is often more successful when the instructor structures the activity (Wolf & Stevens, 2012).

A fairly new practice in academia is "Work-Integrated Learning" (WIL), which provides the student with the required employability skills to function effectively in a workplace environment (Jackson, 2015). WIL practices the theory of active learning, in which learner's progress from listening and visualization, to actually attempting what they have been taught. WIL uses actual learning activities that are aligned to learning outcome objectives and are supported by the effective assessment of targeted outcomes. In order to measure specific skills performed, the assessment is clearly defining the precise skill or behaviors, and the expected level of performance, by using a standardized rubric (Jackson, 2015). The assessment of knowledge content attained by the student should be accurate and specific, and timely feedback should be given in order to improve the student performance (Reeves, 2008).

Performance Assessment

Performance Assessment refers to activities that allow students to show what they can do with what they have learned. In short, it is a behavioral assessment where one directly observes and records particular behaviors for the purpose of a specific outcome based on mastery of learning. First, the instructor must know the tasks that will need to be mastered and subsequently assessed, then the instructor must develop objectives that will measure those tasks. The instructor then must develop a plan to meet the tasks and objectives. The instructor teaches the students

each task based on how each objective is related to the task that must be met. In performance assessment, the student will be tested through observation, and once the students know and display skills associated with a required task and meet the objectives (mastery), they then move on to the next (Fuchs, 1995).

Most performance tasks consist of activities that can be completed in one or two class periods at most, and do not require students to conduct extensive research (Wolf & Stevens, 2012). To gauge each level that a student has achieved, assessment should be designed to *improve* performance, not just monitor it (Kizlik, 2012). Some performance assessments require students to demonstrate skills in problem formulation, research, interpretation, communication, and formulating precise and accurate claims. Performance assessment is based on required job-related skills that meet industry expectations (Wiggins, 1993).

Performance assessment evaluation criteria uses standardized scoring that should mirror expectations of performance in completing real-world tasks, and these tasks should focus on improved student execution and on an instructor's ability to effectively deliver required subject information (Wiggins, 1993). Performance assessment testing is unlike traditional methods of evaluation that require students to recognize, select, recall, or fill in the correct information learned. However, many instructors still use a more traditional common scoring guide or rubric that tells them where students stand on a progression—from entry-level to advanced—in relation to the kind of thinking associated with college readiness (Conley, 2015).

Fuchs (1995) theorizes that there are seven concepts of proper performance assessment:

1. Measure important learning outcomes. The performance assessment must meet the specific problems or tasks that reflect the importance of real-world productivity that are relevant to the workplace and everyday life. Tied to desired learning outcomes of the

student, in which they take on real-world tasks and are connected to set methods being taught.

2. Assessment will cover proper specific instruction, evaluation decisions, and meaningful information on student progress.
3. How the assessment breaks down and pinpoints student performance and links it back to instruction.
4. That assessment will work with many methods of instruction, as it meets different student learning styles.
5. The assessment is not complicated, as it has to have ease in administering, scoring, and evaluation of data.
6. The data communicates what is being learned and what requires more attention on the part of the instructor and students. Where goals and planning can be implemented.
7. The data is reliable and valid and can assist in providing specific direction for future assessments to be undertaken. (Fuchs, 1995)

Authentic Assessment

Authentic assessment has a close relationship to performance assessment and its use of real-world applications in measurement. Some believe that performance assessment is a subcategory of authentic assessment, while others think that performance assessment may or may not be authentic assessment, depending on the context in which it is used. Performance assessment is an emulation of Criterion reference assessment, in which students are measured against specifically defined objectives, but not against another student or group. In its simplest form, authentic assessment occurs when students are evaluated on constructing, performing, or producing a task or product of specific standards, while also requiring some display of

knowledge. Performance assessment should test for skill or ability and be an example of real-world objectives (Frey & Schmitt, 2007). In general, most classroom assessments are designed by the teacher, and the perceived value of the competency that is being assessed is typically dependent upon the progress shown by the students. However, research has shown that teacher-designed tests have a negative relation to assessments made by others (Marso & Pigge, 1988).

According to Madaus and O'Dwyer (1999), performance assessment mirrors authentic assessment in that it uses the 3 P's: performance, portfolios and products, and it actually dates back more than 2000 years when the Chinese used a variation of it (Frey & Schmitt, 2007). Authentic assessment theory is related to the "real-world," meaning the situation or context of the task is a factual problem that may occur in real-world situations. For quality authentic assessment, some conditions must be met, as it occurs most successfully on a group basis, and the difficulty of tasks must mimic real-world conditions (Frey & Schmitt, 2007; Bergen, 1993).

In summation, Frey and Schmitt (2007) define assessment methods through the following criterion-based measurements of purpose:

Table 1
Defining Assessment Types Based on Purpose

Purpose	Assessment Type
To measure a skill or ability	Performance Assessment
To measure ability on tasks which represent real-world problems or tasks	Authentic Assessment
To provide feedback to the teacher to assess the quality of instruction and to improve teaching behaviors, and/or to provide feedback to the student to assess the quality of learning and to improve learning behaviors	Formative Assessment

To provide feedback to students in order to assess the quality of learning and to improve learning behaviors	Assessment for Learning

(Frey & Schmitt, 2007, p 417)

Grading

Grading is a value established to communicate a measurable indication of the information a student has learned in relation to the specific knowledge content of a subject, and can also be used in providing detailed feedback to students (Ko & Chung, 2015). In short, assessment and grading are not the same. Grading is to evaluate individual student learning and performance, while assessment is to improve student learning (Carnegie Mellon, 2016). The purpose of an academic data report is to communicate the level of academic achievement that a student has developed over a course of study. Grades continue to be relied upon for the purpose of communicating important information about academic performance and progress (Allen, 2005). Grades, in general, need to have some sort of shared and accurate meaning, and they should be consistent and based only on appropriate achievement criteria.

If the student's academic performance is not accurately assessed, then the grade does not represent the academic achievement correctly. The primary object of grading is to evaluate whether or not the student has learned the academic content knowledge of a particular subject, and that evaluation is summarized and assessed via a letter or numerical result. Some criteria in grading may include behavior and other factors that are not directly measurements of learning outcomes, such as: attendance, compliance to rules, attitudes, social behaviors, participation, improvements, or level of effort (Allen, 2005). Sometimes the influence of non-measurable criteria of grading can distort the meaning of academic achievement, whereby not supporting

content knowledge attainment. However, these more nonacademic indicators are still valued aspects of a course that are correlated to the learning outcomes. Since many of these factors—such as effort, motivation, and student attitude—are more subjective measurements, their inclusion in a grade related to academic achievement increases the chance for the grade to be biased or unreliable, and thus invalid (Allen, 2005).

Concerning instructors, grading is most influenced by their personal grading practices, past experience, and sometimes not on sound measurements of assessment (Allen, 2005). Some argue that even when teachers are provided with some measurement instruction, they still use subjective value judgments when assigning grades (Allen, 2005; Brookhart, 1993). Ideally, assessment/grading should only account for achievement based on information from instruction, with the student being well-informed of the criteria in advance. Unlike testing results, which can be more indicative of instruction and student learning, other factors like attitude, motivation, and effort should have little to no effect or consideration as part of the grading, as these factors are not easily definable and are therefore difficult to measure (Zhang & Burry-Stock, 2003).

Particularly when a program has required core courses that must be part of the degree program, many programs end up setting minimum standards and document whether or not those standards are met within the curriculum. More and more, these programs have shifted to a learning paradigm of competency-based education, which has tended to lead educators away from so much control over the learning of information that they believe students need to know, and more towards a position of providing information that students more objectively need to know and know how to do. This reflects an evolution of many programs away from more content-based learning to more outcome-based learning, where specific core competencies are established in relation to subject matter that a student should be able to do when given detailed

information on a subject (Hartel & Foegeding, 2004). Programs are often required to have an assessment process for their respective curricula with specific learning outcomes, and to also develop an evaluation system for curriculum assessment that is used to improve the program and student learning. This evaluation process indicates whether students are meeting specific learning outcomes, and also whether or not instruction meets those learning outcomes, resulting in possible improvements in the program. Assessment is further utilized for the purpose of feedback on teaching effectiveness and the ability to meet public expectations, as for-profit schools are arguably more effective at meeting public expectations of higher education than public institutions (Hertzman & Ackerman, 2010).

The Skills Required for Education and Industry

Instructors that are industry leaders with hands-on experience, that establish specifically-outlined competency standards measuring real-world knowledge and skills, are the foundation and core of a culinary arts program (Gersh, 2011). A culinary arts program has only met the highly-skilled employment demands of the hospitality workforce when specific standards are in place, and when these standards fundamentally develop the curriculum, instruction, and assessments that prepare students to be trained for the real world (Gersh, 2011). Yang (2001) found that when culinary faculty were unable to effectively teach the needs of the foodservice industry it was often due to a lack of real-world experience in that faculty. Culinary education is looked upon as the heart of Food and Beverage Education, yet the foodservice industry has expressed disappointment toward the quality of culinary education as a result of waning emphasis on basic culinary-related skills (Yang, 2001).

Research has found that the teaching efficacy of foodservice/hospitality management faculty in higher education has been greatly limited due to a lack of industry experience (Wang,

2002). Powell (2005) states that most culinary graduates received insufficient instruction from educators with professional experience, and that educators that lack practical experience may fail to effectively teach content required for the preparation for current workplace environments. Due to ineffective instruction, the result has been that students are becoming less competitive for employment upon graduating, while programs with instructors sufficient in professional experience can effectively adjust their abilities and competencies to the changing needs of the industry in order to meet current workplace conditions (Ko & Chung, 2015). Therefore, to be an effective educator in the field of hospitality, one must be equipped with practical skills to help students better understand the needs of customers and employers (Bluhm, Drew & Blankenship, 1992). Hertzman and Ackerman's (2010) study indicated that educators more effectively teach subjects in which they have industry experience, and the industry experience of the instructor has been shown to have a direct relationship to student competency in those courses (Hertzman & Ackerman, 2010). The improved ability to give students the skills required for them to become marketable has been brought about from better understanding and communication between the industry and educators. Faculty training within culinary arts programs has helped fill positions through upgraded and formatted educational structures that produce consistency in the application of assessment (VanLandingham, 1995).

Culinary Programs

Culinary Arts Programs are within the scope of Technical and Vocational Education and Training (TVET). TVET is defined by UNESCO as "those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic life" (UNESCO, 2014).

In many culinary arts programs/courses, there is a multidisciplinary style to instruction, yet this can produce an insufficient retention of skills and knowledge for students from one course to the next. Therefore, assessing skills and knowledge retained by the student from course to course is especially important in these types of programs.

Curriculum Development

Culinary Arts programs need to meet industry expectations and make sure their curricula evolve in accordance with industry requirements, ensuring that program competencies concerning skills and knowledge for student learning are current and successfully meet industry expectations. Curriculum changes must be meaningful, must establish assessments to measure student learning, and must verify whether instructors are teaching the necessary elements that the industry expects out of the students upon program completion (Gersh, 2011). Paulson (2001) argues that curriculum changes in the vocational system should be focused on competencies and experiential learning. Furthermore, the employer requirements of graduates and the skills associated with the needs of the workplace need to be researched and verified by culinary education institutions. Culinary Arts programs need to constantly evaluate the curriculum and evolve the program in relation to the needs of the industry. In terms of instruction, students must be effectively engaged, and must have instructional activities that meet their diverse learning styles, and must also be made aware of how learning will be assessed.

Many faculties of higher education have the belief their collective expertise is best suited in leading a change of curriculum, yet in many cases faculty are often not at the forefront, nor cognizant of industry wants (Gersh, 2011). Each curriculum has to start with objectives or specific outcomes, and these have to be clear, measurable, and written in third person using one specific verb tense. Bloom's Taxonomy must also be considered as an indicator of the level of

cognitive demand, and the language from the course objectives has to match each tier of Bloom's Taxonomy, as assessment should be measured using a formative assessment method (Guskey & Bailey, 2001).

Competencies

Culinary Arts programs typically base their core competencies around those of hospitality programs. However, this approach does not reflect the necessary development of skills or abilities, and it also causes program assessment to fall short of specific culinary arts industry expectations and relevancy. As a result, culinary programs modeled on hospitality programs tend to develop curricula, competencies, and teaching that are ineffective at preparing students for real-world expectations (Gersh, 2011). When culinary programs standards are modeled after hospitality programs, this might lead to having essential culinary skills and knowledge become set within curricula without valuable input from industry professionals. Educators and programs might be wise to ask for industry input and adjust their competencies to meet trends and needs so students might be better prepared for the changing and challenging conditions of the workplace (Ko & Chung, 2015).

Many professional organizations have defined competencies as requirements for successful performance on the job: knowledge, skills, ability, attitude, behavior, or judgment based on a specific position. Competencies are functional performance standards based on the ability to accomplish specific job tasks for a given role within the organization (Cheng et al., 2011). From a perspective based more on education, competencies can be perceived as knowledge and skills that students gain from a course or program (Cheng et al., 2011; Hartel & Foegeding, 2004). With both of these perspectives in mind, Paulson (2001) argues that performance-based assessments and competencies must be linked to real-world expectations.

Riggs and Hughey (2011) point out that there is a gap of knowledge and skills between what students are taught and what is actually required in order to be successful in the industry. The essential career skills delivered by faculty through educational programs are not aligned with nor have the same perspective as those of the industry (Riggs & Hughey, 2011). Vocational courses use performance evaluations six times more often than traditional courses, and homework can be considered to be three times less accountable for student grades (Heaviside & Faris, 1994). Rather than just teaching to meet testing requirements, faculty need to develop a stronger ability to teach more towards knowledge and performance based on more specific subject matter developed though assessment, as such assessment can more effectively evaluate the extent to which desired outcomes are met (Shavelson, 2007).

By providing students with real-world settings as learning competencies, Brown (2003) claims that a fundamental objective of teaching would then be to integrate professional experience more effectively into educational courses. The further establishment of goals and the designing of assignments and measurement tools would be required. This form of measurement is based on a set of procedures and principles used in educational testing and assessments (Kizlik, 2007). Data-driven testing is commonplace, as it is collected and analyzed without being reworked into student learning competency outcomes in order to recover missed information (Wiliam, 2013). The need for testing is considered by many as essential to evaluating the education system, as Resnick and Wirt (1996) state that "what you assess is what you get: if you do not test it you won't get it, to improve student performance, we must recognize that essential intellectual abilities are falling through the cracks of conventional testing" (p. 290).

Competencies Work toward Assessment

Competencies represent a set of standards used to measure achievement levels, and they are not just standards used within education, but have also moved into the workplace environment in order to indicate various levels of ability and success. Professional organizations, such as the Research Chef Association, have found that practical performance assessment is the best way to determine if individuals are able to achieve specific competencies (Bissett, Cheng, & Brannan, 2009), and this is essential for certification attainment. Online self-assessment can also be used by individuals in order to evaluate strengths and weaknesses for the purpose of setting up a training plan to reach a specific level. Competencies must be established that specifically outline a context of attainment for assessments at each level (Bissett et al, 2009), that can help to avoid misinterpretation. The National Postsecondary Education Cooperative (NPEC) has defined competency as "a combination of skill, abilities and knowledge needed to perform a specific task" (NPEC, 2002, p. 7), and Voorhees (2001) classifies performance-based learning as "a framework for learning systems that seek to document that a learner has attained a given competency or set of competencies" (p. 8). Research conducted by NEPC has compiled data based on specific issues that are related to competencies within a culinary arts program at the post-secondary level. Competencies should be clearly defined, understood, and accepted by relevant stakeholders, and knowledge and process skills should be measured at predetermined levels. This assessment information will help guide decision making in relation to what specific measurement standards will be utilized, and it will also aid the development of teaching practices and the ability of faculty to assess competencies. The establishment of competencies and their alignment with course goals, program outcomes, and degree attainment will also develop strategies advantageous to student learning (Jones & Voorhees, 2002).

The initial development of competency-based education was a relatively radical move in culinary education away from cooking as a trade, vocation, or craft, in the interest of helping students to become better trained professionals. Competency-based education focuses on skills, theory, and evaluative processes, all of which measure the ability of students to match job skills with the performance expectations of employment (VanLandingham, 1995). When course and program goals are met through learning outcome competencies, student achievement becomes a matter of ensuring that those competencies are measured and are specifically aligned to the outlined course and program objectives. Learning outcome competencies have become the benchmark, whereby the culinary arts instructor determines if the achievement has been successfully executed or not. Competencies and their assessment go hand in hand in relation to the learning experience, and such measurements are then used to amend and/or close learning gaps in terms of how faculty deliver the curriculum and seek to improve student learning (NPEC, 2002).

The establishment of skill standards in curriculum design and instruction allows educational institutions and industry to be more closely aligned, as students develop skills that are timely and in demand. Conversely, those entering the workplace without timely skills either must develop them on the job or possibly suffer the consequences. There is a strong link to job satisfaction and longevity for students that have mastered the required skill set before entering the workplace (Resnick & Wirt, 1996).

Competencies Taught through Real-World Experience

Workplace competencies are developed through acquiring specific industry-related knowledge, skills, as well as intangible qualities that a student should possess. Such knowledge, skills, and qualities are then incorporated into course and program requirements (Cheng et al.,

2011). This also relates back to a discussion of curriculum development, as Gersh (2011) stresses that culinary programs should teach students current industry expectations, and also that students should be assessed based upon the same industry expectations. Within some culinary arts programs, there may be instructors without industry experience. This might result in a failure of students to acquire the skills required by the industry, as such competencies might not be assessed that would indicate that required skills had been achieved (Yang, 2001; Ling, 1996). Therefore, students in these types of instructional situation might not be properly prepared for foodservice work.

Culinary schools require more attention to specifics, while also applying real-world class and course experiences that tend to reduce the gap between the expectations of education and industry. In addition, educators need to strengthen their professional skills to meet requirements of the industry, and this should include trends and other evolving practices within the industry (Lingg, 1996). Programs with employee educators that have professional experience have a better ability to meet expected competencies. Such acquired practical skills and knowledge are then clearly displayed in their courses, which will result in a greater satisfaction of current employment needs as well as improved student learning (Bennett, Milicevic & Dolan, 1998). When educators use their professional background and practical experience, they have a better ability to help students achieve learning outcomes, as well as to align competencies with student readiness for the industry. Teachers with professional experience in the subject instruct with more confidence in their ability to deliver the material and learning achievements to their students (Ko & Chung, 2015). When educators teach competencies relevant to the job market, they are better able to express the importance of mastering skills and knowledge to the students.

Teach and Learn

Teaching is an intentional development of activities or experiences by an individual in order to effect changes in the knowledge and skills of others, and teaching is not complete until learning has taken place. Learning, then, is the result of teaching or being taught, but to understand if learning is actually taking place then there is a need to measure any evidence of how much learning has occurred. Learning creates a change in what is known, what can be demonstrated, or in a given value such as might occur in an internship and the exposure to real-world applications. Learning in school is mostly cognitive, but within laboratory-based courses, it can be psychomotor, which involves the observation of students' ability to demonstrate tasks in real-time, and this activity has now become an assessment practice (Gareis & Grant, 2014).

Two primary components tend to help further teaching and learning: curriculum and instruction. Curriculum is the information that the student needs to learn, instruction is how that information is delivered to the student, and those other two components then need to be assessed in relation to what the student actually learns. These three components are intertwined for the purpose of outcome development, and without each playing a specific part in the intended outcomes, sufficient results will not be achieved. These components also aid the instructor in becoming aware of what information is being learned, as well as what information has not been learned. Without such assessment, the focus of instructors would only pertain to curriculum and instruction, and therefore student learning would not be measured and no assessment outcomes would be met (Gareis & Grant, 2014). At times, behavioral assessment can limit how instruction is applied, and it may also be difficult for students to grasp how each piece of instruction can be combined to relate to a real-world experience or outcome (Fuchs, 1995). Curriculum-based measurements provide information about how student progress over a period of time, and

assessments (tests) are used for data measurement. This information then determines the level of skill developed by students and how programs can be improved (Fuchs, 1995).

Assessment provides a spectrum of what the students learn to how well the instructor is delivering the appropriate information to students (teacher accountability). Beyond the assessment tools found in standardized tests or quizzes, there are other means of assessment, including student conferences, facial expression, homework, and many others. All of these assessment practices involve the instructor in gathering data in order to evaluate and adjust methods in the pursuit of helping students to acquire relevant knowledge and skills. The governing bodies of the school have set specifications in terms of what is required of a teacher in a given set of competencies, in order to measure the success of both students and teachers (Gareis & Grant, 2014). Studies over the last 20-plus years have consistently shown that teachers are lacking the ability to properly perform student-learning assessment (Gareis & Grant, 2014). Although assessment has indicated progress in student learning, sufficient engagement with teachers in order to utilize proper student assessment has been lacking. Recently there has been a push to further develop assessment literacy for teachers, as this should provide specific tools to assist the teacher in properly using assessment systems within the classroom (Gareis & Grant, 2014).

Assessment - Determining the Effectiveness of Teachers

There is an emphasis in today's academia on a need to know how effective teachers are, and whether they have developed teaching skills that are effective with their students. The knowledge, combined with the skills needed to teach, are good indicators of teaching effectiveness. An even better indicator is performance assessment, as this measures the readiness and competency in terms of how effective a teacher is in the classroom (Darling-Hammond,

2010). Current work focuses on value-added methods that evaluate the level of student learning achieved, as evidenced by the evaluations of teachers, as such evaluations are intended to provide feedback on the influence and effectiveness of the teacher. However, this evaluative method can be flawed. On the other hand, observation-based teaching evaluation is closely related to achievement and provides useful feedback to help teachers develop better effectiveness (Darling-Hammond, 2010).

Classroom assessment information—tests, assignment projects, etc.—must be accurate and meaningful. They should identify whether course learning outcomes are measures that accurately represent student achievement (Brookhart, 1999). Of course, all forms of assessment contain an element of measurement, but in order for that measurement to be meaningful, it must be clear exactly what information is being measured, for whom it is being measured, and how it is being measured. There are also elements associated with assessment that must be meaningful, clear, and coherent, including cognition, observation, and interpretation. Cognition relates to learning, performance, and achievable assessments; observation relies upon tasks used to gauge the learning taking place; and interpretation is about how the assessment or tasks are scored. Assessment focuses on student success, how information has been gathered, how students demonstrate the knowledge and/or skills that they have learned, and also how evaluations of student knowledge have been determined. Student success can be a useful tool for teachers in the development of effective instructional activities, as well as in modifying activities for the purpose of improving student learning.

When communicating assessment goals to students, the focus should be on specific factors that will assist in improving performance rather than particularly judgmental feedback. In assessment, judgment should be used only to improve instruction and the structure of a course

(Zhang & Burry-Stock, 2003). In many cases, a lack of supporting rubrics that outline levels of performance and scoring procedures prior to instruction can create issues when conducting assessment. Other forms of assessment communication can focus on the interpretation of test results and grading procedures (Zhang & Burry-Stock, 2003). Outcomes with clear and specific targets should be established, focused on appropriate student learning that will be assessed and on specific achievements required of students, all of which should be based on teaching standards designed to meet course outcomes. If outcomes are clear to the instructors, then they can be clearly communicated to the students, as this allows the students to know the information required to be successful (Chappuis et al., 2011). Learning outcomes should be soundly structured in their design, and their purpose is to support the information that needs to be assessed in order to ensure the achievement of expected results. The selection and design of suitable, high-quality assessment goals that properly measure student achievement can reduce or eliminate the sources of bias (Chappuis et al., 2011). The measurement principles of validity, reliability, and fairness still have meaning when applied to assessment, as does the purpose of formative and summative assessment (Wolf & Stevens, 2012). All of these factors collectively add up to the real purpose of assessment, which is not to categorize students into specific groups, but rather to gain information about the student performance for the purpose of mastering content and/or skills.

Effective communication involves gathering information from the assessment process and disseminating it. This is done through the effective use of feedback that directly addresses instruction and student learning. The process of gathering this information helps to determine whether the instruction has been effectively linked to the subject matter directed towards the learner. This also helps to determine whether the student has acquired the appropriate

information, as well as determining a measurable amount has been achieved by the student. The extent to which an effective line of communication has been developed between the instructor and students determines the effectiveness of distribution in terms of feedback from the assessment process (Chappuis et al., 2011). Student involvement is focused on student-centered learning, and how effectively students will use information based on feedback in order to self-guide their efforts in achieving targeted learning outcomes. This helps students to stay conscious of their own learning by measuring any positive impact on motivation and achievement has been attained (Chappuis et al., 2011).

Rubrics

A rubric is a multi-purpose scoring guide for assessing student production and performance, typically taking the form of a scale that should work to advance student learning and improve teaching through the use of a sound assessment tool (Wolf & Stevens, 2012). The use of a rubric as a teaching tool establishes the criteria that determine quality. The use of rubrics in scoring student work can give instructors the ability to help students improve weak work, as well as to determine how student work compares to similar work in the real world. Instructors can analyze student work and make comments for improvement, while students have a tangible list of possible traits that indicate quality, and the use of developmental criteria and traits can aid in organization and transitions in instructional lesson plans (Arter & McTighe, 2001).

Essentially, a rubric is an authoritative tool used in academia as a way of communicating expectations for an assignment, and is therefore a scoring tool that outlines the exact expectations for a specific task or assignment. Many within academia have expanded it to include a list of criteria describing levels of work quality from poor to excellent (Rubistar, 2008). Rubrics, scoring guides, and performance criteria describe what to look for in production or

performance in order to determine the level of quality. In the classroom, rubrics can be used to gather information about students in order to plan instruction, to track student progress toward important learning targets, and to report progress to others. Classroom rubrics might also help students to become more proficient in terms of the very performances and production that are being assessed. The criteria used to enhance the quality of student performance, and not simply just to evaluate it, is important, as it is utilized in assisting students in the development of knowledge, and in furthering the understanding and skill that pertain to their own quality of work. This helps to clarify the specific standards of performance quality that constantly provide feedback growth toward meeting those standards.

Rubrics may be applied throughout a course or program, as well to individual assignments. They might be used to evaluate participation, lab work, and the behavior expectations in a classroom or course (Stevens & Levi, 2005). Rubrics might also be used in the assessment of students, in the amending and making of decisions based on instruction, and in defining the requirements needed in order to properly complete a self-assessment. In this type of self-assessment, students review their own work and make improvements based on the rubric criteria (Arter & McTighe, 2001). However, as rubrics may be over used, it is best to be selective about where and when rubrics are used, and about what is suitable for the use of rubrics.

Rubrics can be used in efforts to assist students in better understanding various levels of success, and also a self-evaluation tool for students. When students know and understand in advance the criteria by which their work is being assessed, they are more committed to produce better quality work (Andrade & Du, 2005). While teachers work toward student-centered learning through the use of rubrics as a form of assessment, rubrics also give students prior knowledge of evaluative criteria and therefore eliminate any guessing in terms of what is

required of them (Andrade & Du, 2005). Furthermore, feedback from the instructor is guided, and the student can then better reflect upon the work because expectations were already clearly set and communicated to them (Andrade & Du, 2005). Rubrics also support students in allowing them to better plan the progression of their work. Established guidelines are determined, as our objectives that have to be met in in order to achieve end results. As students work through tasks, they can refer to preset standards to informally assess their own work and determine if the quality fits into the parameters (Andrade & Du, 2005).

According to Stevens and Levi (2005), rubrics might make grading easier and faster, as specific dimensions for meeting expectations are used. These dimensions are called performance anchors and are pre-established. Performance anchors in rubrics are expectations focused on the quality of the task being undertaken. Anchors also help to provide instructors with a better picture of a class's ability to respond to assignments, and allows for higher quality in feedback through either formative or summative methods. Anchors used in the formative method for feedback are based on a scale of predetermined multi-level expectations of specific evaluative criteria. The summative method of feedback supports grading with comments on the quality of work, and this method may or may not use dimension of scoring (Stevens & Levi, 2005). Rubrics are comprised of four basic parts: task description, scale (level of achievement), dimensions of the assignment or task (breakdown of knowledge and or skill the assignment involves), and description of what constitutes the various levels of achievement (feedback on specific performance) (Stevens & Levi, 2005).

Rubrics may be used for the collection of student data in order to better plan instruction and track student progress towards learning outcomes. Rubrics might also assist teachers in defining targeted learning objectives. This might help to develop instruction and be more

consistent at scoring work and reporting student progress. Rubrics may help to support student proficiency in production and the performance of tasks (Arter & McTighe, 2001). This establishes clear goals in which the criteria of expected quality is known in advance. As a result, students learn the standards and expectations that are used over and over. A clear picture of quality develops over time.

Rubrics have been shown to clearly enhance student learning. They track their own progress, achievements, and success. Rubrics are used widely and have many forms. Performance rubrics are tools for determining student learning in a system of quality ratings focused on a specific task being performed. Rubrics specify the parameters of quality as they relate to performance and display learning growth (Bass & Glaser, 2004). When students know the criteria for quality in advance of their performance, they are provided with clear goals for their work. Hillocks (1986) states that "Scales, criteria, and specific questions which students apply to their own or others' writing also have a powerful effect on enhancing quality. Through using the criteria systematically, students appear to internalize them and bring them to bear in generating new material even when they do not have the criteria in front of them" (p. 249).

Effective rubric development places emphasis on context and details concerning student subject matter as well as concerning student progress in relation to specified knowledge and skills. The scoring criteria and standards of rubrics need to reflect quality of performance rather than quantity of information, as the interpretation of an analytic rubric deals with student performance viewed through numerous characteristics in combination with overall quality. A holistic rubric can be used as a more generalized evaluation of overall scoring that can be applied to a multitude of assignments, in contrast to a specific rubric that is used for each assignment. However, an analytic rubric can act as a more informative instrument for teachers, as it

determines specific information, while a holistic rubric tends to lack fine details. When it relates to specifics, the analytic rubric provides valuable information on the strengths and weaknesses of students while the holistic rubric provides an overview of the entire class (Bass & Glaser, 2004).

Rubrics of high quality that tend to have a positive effect on students and the classroom tend to focus on four characteristics: content, clarity, practicality, and technical soundness. Content is what to look for in determining the quality of student performance. Clarity has to do with the consistency in terms of whether the teacher and students understand the evaluative criteria in precisely the same way. Practicality relates to the difficulty in using a rubric in terms of how easily it can be understood and how effectively it measures specific learning outcomes. Technical soundness or fairness relates to the tasks being performed and assessed in relation to the designed goals provided during instruction (Arter & McTighe, 2001).

Education, Industry, and Job Satisfaction

Students that graduate from technical institutions typically learn the skills that industry employers have identified as workplace entry skills necessary to experience higher levels of job satisfaction (Antun & Salazar, 2005). This results in employees being more fully committed to their job and their employer. Lingg (1996) identifies job-skill confidence as an important factor in career success, as those students with more highly developed cognitive abilities have greater success when it comes to attaining the skill set to become successful. They have learned early on about the skill set they have versus what is required for their position. The industry-required knowledge, competencies, and skills involved in speed scratch and convenience product analysis are taught in public, accredited, associate-degree granting, higher education institutions. This higher level of involvement between industry and education often results in a commitment of employees staying at their job for longer periods of time (Lingg, 1996). Hence, the connection

between the workplace and the program has been established as being an outcome that is highly desirable.

Functional Abilities

Wahlgren and Ahlberg (2013) performed a study using students to solve real-world cases through qualitative methods of value-added assessment where functional knowledge was secondary to how the task was worked through: "Functional knowledge in quantitative methodology is defined as the mathematics and statistics skills necessary for a successful professional career in the field" (p. 70). This quantitative value-added method consists of assessing fundamental knowledge while also measuring progress and retention: "This practical definition is chosen in order to comply with Kristianstad University's objective of educating Sweden's most employable students" (HKR, 2009, p. 55). The theory is that students should develop improved functional skills and knowledge after the course has concluded. In order to know if students have achieved additional functional skills and knowledge through effective teaching, their ability also needs to be assessed even before the course begins. The amount of prerequisite material that has been mastered should be appropriately measured (Hakansson, 2014).

Summary

Assessment is a means of measuring and gauging student abilities to perform and display skill and/or knowledge. These methods and processes are practiced in general education, and programs such as culinary arts have shifted towards utilizing assessments more regularly, with ACFEF accredited programs leading the way. Assessment is the process of data collection through various means to discover whether or not students are displaying the ability to improve

their education (Roche et al., 2014). Assessment connects determined objectives to a specific pre-established level related to knowledge or skill attainment (Gareis & Grant, 2008).

This chapter has briefly listed and defined many different tools designed to assess student abilities, as the assessment instrument is intended to evaluate student success. In general, assessment tools fall into formative and summative categories, and are utilized through formal and informal processes. The formative method is based on the ability of a student to perform a task that is measured against a pre-determined standard. The achievement level can be as simple as correct, incorrect or partial, as the last two represent a poor outcome that could be remedied by the extension of a lesson that includes more practice on performing a functional task (Pashler et al., 2007). When utilizing this assessment method, a student requires prior knowledge of the expectations and the standards being measured.

The other category of assessment is summative, which is often used for high-stakes measurement, such as midterm and final exams. The goal is to evaluate student ability to demonstrate learning through responses at the end of an instructional unit, with results being compared against a standard. Summative assessment is generally designed to use questions and statements that prompt the students to use critical thinking through verbal or written explanation (Pashler et al., 2007). Depending on the learning outcomes, the assessment may or may not involve performing a task and the subsequent evaluation of a measurable competency on the part of the student.

Both methods of measuring achievements can be either formal or informal, graded or not graded. In general theory, formal involves having a grade or score attached, while informal involves constructive feedback. In either instance, the student should receive some form of informational feedback related to material being evaluated. Each system provides opportunities

to have student-instructor interaction in order to expand upon the assessed task. Other assessment method types include objective testing, self-assessment, peer-peer feedback, Work-Integrated Learning, performance and authentic and can be graded or not graded. Grading is a means to indicate the measurement of achievement (Ko & Chung, 2015), as a way of showing that learning has been assessed (Carnegie Mellon, 2016), and the success of the student.

When setting up assessment, there is a need for a clear purpose, intended target, sound design, and effectiveness of instruction, feedback, and reflection by the student in order to help further learning, and also to help the instructor in the adjustment of methods of instruction to better meet student needs (Chappuis et al., 2011).

Assessment provides further feedback on the effectiveness of a program. The assessment process documents a lot of usable data related to the student, teacher, and program. In terms of students, assessment helps to determine whether a student has attained an acceptable level required to move forward, or whether a student requires additional development of subject matter. In relation to teaching, assessment pertains to the effectiveness of instruction in terms of meeting the expectations of the student, as well as recognizing and also closing the gap between learning and course subject matter. Additional data indicates whether the program is meeting industry standards and producing an employable workforce that can achieve the accrediting body's outcomes.

Chapter 3

Methodology

This chapter discusses the methodology and procedures that were used to identify respondents, information on what is included in various rubrics and assessments, the process for creating the rubrics and assessment documents. It discusses whether assessment is utilized to evaluate student performance in food laboratories and whether the respondent believes the stated assessment measures reach desired competencies and industry expectations. Additionally, this study is also interested in whether there is student involvement in assessment, also when and how the assessment is shared with students and whether students allowed to respond to assessment.

This is primarily quantitative research. The study examined response data for 2- and 4-year culinary arts programs from administrators, teachers, chefs, and staff that have accreditation through the American Culinary Federation Educational Foundation body. The study sought to explain why approaches to laboratory student evaluation might differ among various culinary institutions and programs. The study questions seek participant responses in an effort to share information and insights on approaches to student evaluations and the assessment process in culinary arts programs. Differences based on respondent positions were analyzed by reported position using SAS (2011), using the Exact Chi-Square test, because the simple Chi-Square warned that 50% of the cells had expected counts of less than 5 (Asymptotic).In addition to the quantitative data, the survey includes one qualitative question which asks respondents about the best and most challenging aspects of their assessment process. The survey was approved by the NMSU committee for Human Subjects and the NMSU IRB review board (Appendix A).

Research Design

The researcher chose a descriptive survey method in order to evaluate the assessment practices in culinary laboratory classes by using quantitative questions seeking respondents' position, use of rubrics or assessment methods, standardized documentation, development of rubrics, areas in which students are evaluated, who performs the evaluations, how often assessment is processed, and the level of engagement of students in responding to evaluation. The survey also includes qualitative questions focusing on responses concerning the effectiveness of assessment as well as the most challenging aspect of the evaluation process. Additionally, the survey seeks to compare responses representing opinions from administrators and staff, administrators with teaching duties and instructors or chef assessors.

Descriptive research is a purposeful process of data gathering, analyzing, and classifying and tabulating data representing practices, beliefs, processes, trends, and cause-effect relationships that can determine the accurate interpretation of the data. This type of survey was chosen in order to maximize the number of participants that could respond within a limited amount of time. The study is primarily comprised of quantitative survey questions, though qualitative questions are utilized in the data collection and analysis procedures (Ritchie & Goeldner, 1994). The researcher used a selective sampling of individuals that belong to ACFEF-accredited programs from a larger population of culinary arts programs. The focus is to determine a theory based on the comparison and contrast of the findings.

Data Collection Instrument

The data collection instrument was a survey questionnaire with essential questions based on assessment methods and processes, and it used the "mixed method" approach, made up of both quantitative and qualitative questions. This allowed the researcher the ability to gather additional input from the respondents and the survey was approved by the IRB (see Appendix

A). The research survey questionnaire was developed to acquire specific data, focused on the use of rubrics and other assessment methods, from participants in an accredited culinary arts program from a diverse demographic population. Descriptive questions about the student assessment process were prepared in the interest of finding the data necessary for inferential statistics related to the research questions. The survey had a total of 26 questions and was designed for the respondents to complete it with minimal effort and time spent. Table 2 displays the type of information obtained from the various questions in the survey questionnaire, and the complete survey is included in Appendix B.

Table 2

Survey Questions

Data Type	Question
Informed consent	1.
Type of Position in Organization-Ind. Variable	2.
Accreditation Status	20
Certificate/degrees offered	21
Descriptive Questions	3-18, 23, 24, 26.
Qualitative Question	19, 22, 25.

The demographic questions in the survey questionnaire asked respondents to identify their position within academic settings by checking a box, and they were also asked to provide additional information about the nature of their respective culinary arts program. The survey gauges the perception of participants in terms of elements related to the evaluation of student performance in relation to a variety of assessment topics. In addition, the questionnaire covered one question that sought subjective qualitative information from the respondents, which was intended to provide additional resources that could place the findings in context.

Sampling

The target population of the study included administrators, staff, instructors, and chefs employed at American Culinary Federation Educational Foundation accredited culinary arts programs. The ACFEF is the accreditation body that approves programs that have met the criteria established for the minimum acceptable industry standards being taught. The ACFEF was established by the ACF, in order to manage the educational endeavors of culinary arts programs, as a part of its mission to elevate the standards of skill and knowledge found in professional chefs and cooks. The researcher drew from the ACFEF-compiled list to generate the survey. Therefore, the inclusion conditions for the sample frame involved individuals who were instructors such as chefs, faculty, administrators, or administrative assistants employed at institutions with food service/culinary laboratories that provide degree and certificate programs, or at least courses in the culinary arts. The ACF gave permission for the researcher to use their list of programs for the survey. This yielded a list of 278 participants from the list of culinary arts programs accredited through the ACF, these individuals were invited to take part in the survey study by email. Over the 5-week period of the survey, that included weekly follow-up reminder emails to support the survey, produced only 74 completed responses.

The study utilized selective sampling of respondents allied with the target population that were employed at the culinary arts programs. Selective sampling is often used in a study such as this in which lower or no cost is associated with the sample, because there are no costs or constraints associated with the other types of sampling procedures (Altinay et al., 2015). The researcher invited only individuals associated with programs that are accredited through the ACFEF. When applying selective sampling, there is no guarantee that the respondents are representative of the population.

Data Collection Procedure

The research survey questionnaire was drafted and uploaded to Survey Monkey, as this site is ideally set up for posting surveys and collecting data. Through the use of Survey Monkey, the researcher has the ability to attach a hyperlink to the mass emailing list of participants within the target population required for the study. This type of site allows data only from the intended participants, and also provides additional services for summarizing data from the respondents. This affords researchers a quicker turn-around time required for data analysis, and also creates more ease in calculating quantitative information with minimal qualitative responses for analysis.

The researcher sent emails to participants who met the ACFEF accreditation criterion from the sample frame, requesting them to participate in the study by completing the survey questionnaire through the online hyperlink with permission from the ACFEF. The email detailed the intent of the survey and clarified the role of the participants. The email also contained the resource hyperlink to the Survey Monkey webpage where the survey was located. Follow-up reminders were sent out to the target population one week after the initial invitation to participate in the survey was delivered, and then again three weeks after the initial invitation. The survey was kept open for a 5-week period. Once the participants opened the survey through the hyperlink to Survey Monkey, an informed consent agreement populated the screen, and was positioned as the first question of the survey questionnaire. Upon the respondents' acknowledgement and acceptance of the informed consent terms, they were then allowed access to the remaining questions in the survey.

Data Analysis

The data from Survey Monkey was downloaded on to an Excel spreadsheet and then analyzed using the SAS software version 9.3 (SAS, 2011) program, first performing a frequency

analysis. The data was examined for inconsistent responses and then cleaned up as necessary. The survey answers were then reviewed, because some questions allowed "other" responses, which should have been answered in another category. Because there was additional information provided in the other responses, the data was adjusted in order to conform to the perceived intent of the respondent. In question 5, a respondent answering "no" also commented "sometimes," so that answer was changed to indicate sometimes. The frequency analysis provided some indication of the general trend of the responses to the survey questions. The research involved the use of selective sampling and the survey was tested in an extensive pre-test, and questions were revised after input from 18 administrators of culinary programs. In addition, frequency is the only type of descriptive statistic that can be used with categorical variables, such as those contained in the survey questionnaire (Sims, 2004). Responses on the research questions were analyzed with SAS (2011) by reported position, using the Exact Chi-Square test, because the simple Chi-Square warned that 50% of the cells had expected counts of less than 5 (Asymptotic).

Reliability and Validity

The researcher utilized a pre-test in order to pilot the survey, to provide reliability, and validity (Wiersma & Jurs, 2009). Validity is concerned with accuracy, as well as with the determination as to whether the study can be replicated and still achieve similar results. Reliability determines whether the questions are directly related to the information that will be assessed. After testing the results from the directors of culinary schools, the reliability and validity of the instrument was determined to be sufficient for the purpose of this study.

Ethical Considerations

The research study was conducted under no physical or psychological threats to the respondents who provided data through the completion of the survey questionnaire, as the

primary objective of this research was the pursuit of knowledge and truth, along with the prevention of falsified data. The survey was conducted through a trusted environment (Survey Monkey), with researchers under normal conditions in order to ensure acceptable behavior.

Out of ethical consideration, the survey maintained confidentiality, and the identities of the respondents were not distinguishable on the survey questionnaires. Furthermore, the additional information provided did not reflect negatively on an institution or culinary arts program. Each respondent was identified by a specific character that was known only to the researcher. All information that could have possibly linked the identity of a respondent to a survey questionnaire was kept in a secure location accessible only to the researcher.

The full population targeted by the survey were required to address a question requesting each respondent's informed consent in order to participate in the survey. As part of the introductory section to the survey, human subject information regarding the intentions of the study was provided, as well as the lead researcher's contact information, and the participants' role in providing feedback. This section of the survey also clarified the lack of risks involved in participation, as well as the privacy safeguards concerning any feedback provided by the respondents.

Limitations of the Methodology

A limitation of the methodology is the use of a selective sampling technique, which reduces the ability to generalize the findings to all culinary arts programs. The study was also limited by the fact that several culinary schools—including major schools such as the Culinary Institute of America and the New England Culinary Institute—are not accredited by the ACFEF, which was the primary focus of this thesis. There is no certainty that the findings represent the attitudes and perspectives of the population of members of the ACF on student laboratory

assessment because the respondents might not have been candid or truthful in their responses to the survey questions, despite assurances of confidentiality. Additionally, the lack of participation or non-response from 204 of the 278 invitees is another limitation of the research survey. However, it is hoped that any lack of candor among the respondents and non-response bias had only a minimal effect on the findings.

An inherent limitation in the methodology is the possibility that researcher bias influenced the design of the study. It is also possible researcher bias might have influenced the conclusions drawn from the findings. The strategy to minimize the effect of researcher bias was to use defined criteria for decisions affecting research design and interpretation of the findings.

Summary

This study used a quantitative approach to the research with a non-experimental, cross-sectional design. The survey was designed to identify whether ACF-accredited program personnel were using some form of student evaluation in foodservice/culinary arts laboratories. The survey went on to gather additional data on the frequency of evaluations, on how students are informed, and on whether students can respond to the findings. There were some questions that asked for additional write-in responses based on the participants' knowledge of the student evaluation process within their own programs.

The data collection instrument was a survey with items intended to obtain categorical data from respondents on the aforementioned information. The questionnaire contained specific items used to obtain demographic data, as the sampling frame was limited to administrators, administrators with teaching responsibilities, and faculty of the ACFEF programs. This allowed for a selective sampling approach that was used to access the sample of a specific

sub-population within culinary arts programs. The data collection procedure relied on the online survey platform Survey Monkey, which limits access to the survey to invitees only. The researcher sent email solicitations to 278 prospective participants inviting them to participate in the study. The procedure resulted in 74 completed surveys. Consequently, slightly over one quarter of the emails sent out resulted in contributions to the study.

The limitations of the methodology included the possibility of bias coming from nonresponse with only 74 of 278 participated in the survey. Limiting the survey to only ACFEF-accredited culinary arts programs is also an obvious limitation of the study, as these programs have achieved the same standards of competencies required in to be certified by the ACF. The research cannot be generalized about all culinary arts programs. In addition, a researcher bias possibly influenced the findings and the research design, and there is a possibility that respondents might not have been candid in the information that they provided.

Chapter 4

Results

Types of program, accreditations, and positions of respondents

Out of 278 survey requests, a total of 74, or 27%, were returned. Most of the programs 94.59% (70) were two-year programs. Only 2.7% (2) were 4-year programs. Certificate completion was offered as an exit point for 60.81% (45). Because many programs offer multiple exit points per ACF accreditation options, the survey allowed respondents to choose more than one answer. All 74 were certified by the ACF as Accredited programs. Only 7 total programs listed other accreditations with 4.05% also certified by the Accreditation Commission for Programs Hospitality (ACPHA), 4.05% by the Accrediting Council of Continuing Education and Training (ACCET), and 5.41% by the Accrediting Council for Independent Colleges and Schools (ACICS). Respondents who identified themselves as administrators or staff accounted for 17.56% (13), while 27.03% (20) were administrators with teaching responsibilities, and 55.41% (41) were faculty.

Rubric basics

While none of the respondents reported that their program did not have a system in place to evaluate students in foodservice/culinary laboratory classes, 9% of them indicated that a system was in place for some classes, and 91% reported that all classes had a system in place. Results are presented in Table 3:

Table 3. Does your culinary/foodservice program have a system in place to evaluate student performance in foodservice laboratory classes?

Position	N	Yes,	Yes, for some classes	No
Administrator	13	92%	8%	0
Administrator with Teaching Responsibilities	20	90%	10%	0
Faculty	41	90%	10%	0
Total	74	91%	9%	0

Exact Pearson Chi-Square Test Pr ≥ ChiSq P = 1.0

This does not indicate, however, what courses or at what part of the curriculum students were being assessed. The responses were not unexpected because having a method of laboratory evaluation in place is required by the American Culinary Federation accreditation standards but was expected that more comments supporting the use of rubrics would have been received. During accreditation visits, and in the self-studies, all ACF programs are required to document that a system is in place.

The next survey question asked respondents if a standardized form (rubric) is used for student performance evaluation, and 90.54 % (67) reported that rubrics were indeed used, while 9.46 % (7) reported that standardized rubrics were not used for evaluation of student performance. Rubrics were explained and defined in the question as follows: "Rubric in foodservice/culinary laboratories is defined as a scoring guide used to evaluate the quality of student laboratory performance. Rubrics usually contain evaluative criteria, quality definitions for those criteria and a scoring strategy which is usually numerical." Rubrics are generally based on industry standards, as the ACFEF has competencies that they require students to achieve, which implies that a system of assessment needs to be in place. One of the most interesting and challenging issues put forth in the survey asked respondents about who has input in developing

the rubrics used in student evaluations at their respective programs, and the results are shown in Table 4:

Table 4: Responses indicating whether faculty are allowed to create their own rubrics.

Position	N	Yes	Sometimes	No
Administrator	13	46%	15%	38%
Administrator with Teaching Responsibilities	20	50%	30%	20%
Faculty	41	83%	12%	5%
Total	74	67%	18%	15%

Exact Pearson Chi-Square Test Pr≥ ChiSq P = 0.0078

The fact that the Exact Test indicated significance was interesting because of the range of differences in opinion between respondents, based on the positions they hold. The question asked "are faculty allowed to develop and use their own standardized form (rubric) to evaluate student performance in food laboratory classes with appropriate approval by administrators?" There were four comments including:

- There seems to always be some general subjectivity within our Labs. I.e. More Salt / Less Salt.
- The Faculty have input being subject matter experts.
- Each of us have rubrics, but they are not all the same.
- With Feedback from other members of the dept.

The next question sought to determine the role of various players in terms of their involvement in evaluating the performance of students. The survey specifically asked, "whom is responsible for completing student performance evaluations?" Respondents were allowed to mark more than one response, because sometimes more than one person is involved in the

evaluation process. The category of chef was included, because some programs have chefs who work in the laboratories. The program administrator 4% (3) and program director 4% (3) had equally low responses. The instructor 92% (67) and chef 35 (25) responses were much more common. There was one additional comment that the program director was also involved in the process. One person did not answer this question.

Rubric content and administration

The next question asked about "who had input establishing the student performance evaluation form." The survey allowed respondents to choose all that applied, and thus only descriptive statistics are summarized in Table 5:

Table 5: Responses indicating stakeholders' involvement in evaluation form creation.

Who Provided Input	Percentage	Number of Responses
Instructors	100%	74
Industry	72%	53
Administrators	64%	48
Students	22%	16
Staff	19%	14

These responses concerning stakeholder input indicated that every program used instructor input, and to a smaller but still significant degree (72%) of programs included industry involvement. This was 8% higher than the responses indicating administrator input. The fact that around 20% of the programs included student and staff input was also interesting. This could be an indicator that the advisory boards have a good relationship with the program, and therefore pursue outcomes directly related to the expectations of industry. The responses in this question

might have contributed to the categories included in relation to the evaluation of students on the rubric shown in Table 6.

Table 6: What areas of performance are listed on the rubric form address to evaluate student laboratory performance? Respondents marked all that applied and were also allowed to make comments.

Competency	Percentage	Number of responses
Cooking/production competencies	99%	73
Proper Sanitation	96%	71
On Time attendance	93%	69
Proper Culinary Attire	93.%	69
Teamwork	84%	64
Practical Testing	81%	60
Speed in completing production tasks	78	58
Customer Service	37%	28
Language	23%	17

To those not involved in culinary education, the breadth of possible responses might appear confusing, but laboratory performance standards are varied and therefore not always consistent. The comments listed 4 additional categories including, organization and efficiency, as well communication. One comment about other industry standards (such as pastry or baking) was not actually clear, but the final comment called for evaluation in the rubric in relation to prepared and finished food products.

Logically the next question asked, "How often is the student performance evaluations performed?" Surprisingly 72% (53) responded that evaluations are performed every class period,

and 14% (10) reported that they were performed weekly. Only 7% (5) reported twice a semester, 4% (3) once a semester, 1% (1) weekly, and other responses 3% (2). The other responses explained that each instructor does evaluation differently, as some do it weekly while others do it once a quarter.

The survey asked, "how are the students informed of their evaluation score on the rubric?" Due to the fact that oftentimes multiple methods were used, more than one method was reported. The use of gradebook notification using a Web Portal (Canvas, Blackboard, WEBCT, etc.) was most common with 76% (56), with email 4% (3) the least reported. Face to face and formally verbal were also reported 59% (44), as well as face to face written 46% (34), and there were also four comments. One comment discussed the Sesame application which students and instructors used on smartphones, another said that each instructor does it differently, and one added that they were currently in process of making a decision on which method to use. Another method allowed students to grade themselves on the same rubric, then the chef or instructor would review the student rubric and return the instructor assessment to students. Chef/instructors explain the differences between the instructor evaluation and the student's self-evaluation. The responses also were a segue to the next question in Table 7.

Table 7: Does the student have the ability to respond to the laboratory performance evaluation?

Position	N	Yes	No
Administrator	13	92 %	8%
Administrator with Teaching Responsibilities	20	95%	5%
Faculty	39	100%	0%
Total	72	97%	3%

Exact Pearson Chi-Square Test Pr≥ ChiSq P = 0.2066

Respondents were also queried "Does the evaluator have the ability to attach comments to the student performance evaluation form," and 96% (69) reported yes while only 4% (3) reported no. The respondents' answers were also interesting when asked "is there a method used to document the student has read and understood their performance evaluation?" Only 40% (29) responded yes, and 60% (43) responded no with 2 non-responses.

Effectiveness of the evaluation system

Respondents overwhelmingly (97%) replied that the student performance evaluation system used in their program is an effective method, and that the student evaluation system improves overall student performance in laboratory classes. In addition, 94% of respondents replied that the scores on the student performance evaluations are helpful in assessing whether future foodservice managers or culinarians are prepared for their careers, which leads to the next question in Table 8.

Table 8: Is student performance evaluation effective in determine whether students have mastered competencies and outcome objectives for the foodservice/culinary program?

Position	N	Yes	No
Administrator	13	69%	31%
Administrator with Teaching Responsibilities	19	89%	11%
Faculty	41	83%	17%
Total	73	82%	18%

Exact Pearson Chi-Square Test Pr≥ ChiSq P = 0.3406

The results from this question, while not significant by position, were interesting because of the fact that 18% responded that the student evaluation system was not effective in measuring outcome competencies taught in the program. The responses were also interesting because the next question in the study asked respondents "do you think the student evaluation system

improves overall student performance in laboratory classes?" Overwhelmingly, 97.14% (68) responded yes and only 2.86. % (2) no, with 4 nonresponses. Literature does indicate that student performance documents can be helpful in revising competencies and curriculum. Responses that did not report significant differences by position can be seen in table 9.

Table 9: Are the student performance evaluations scores helpful in evaluation and revision of curriculum competencies?

Position	N	Yes	No
Administrator	13	92%	8%
Administrator with Teaching Responsibilities	19	84%	16%
Faculty	41	80%	20%
Total	73	84%	16%

Exact Pearson Chi-Square Test Pr≥ ChiSq P = 0.6367

Qualitative results

Some of the most interesting results of the study were the 42 qualitative comments that were prompted when respondents were asked about the best and most challenging things related to evaluating students in laboratory classes. They provide feedback and input related to the survey in full text of the qualitative responses is included in Appendix C. The responses ranged from positive comments, to comments on the process, to issues with the process, to thoughts about student ability.

Positive thoughts: Best things

The overriding theme appears to be "Done right it works! But here we don't do it often enough" which was provided by the first participant in the study. Others said that "The system sets clear expectations for the student and the instructor" and "It forces Instructors to evaluate students on a daily basis." Another shared that "Seeing students skills progress through the

evaluation process is most satisfying. I have had student come back after passing a class and said that they appreciated the 'one on one evaluation process used, it helps in other classes.'" Quite a few respondents explained that the rubrics had positive effects on the culinary education process, but many also mentioned that it is not a turnkey system, but rather is one that takes work. One respondent explained the process and how it has improved the institution: "Originally the evaluations are very subjective. We are trying to create evaluations that have direct competencies relating to each lab class. Much easier to assess the student based on very distinct outcomes in a list. The student is given the syllabus with the outcomes listed and knows what they need to accomplish in that lab. I started almost two years ago as a new instructor and the grading was very subjective. We needed a more precise way to measure the student success." Another respondent said that "the most challenging component is generating enough support and participation from throughout the faculty, staff and industry for the process. The best thing is the amount of support and participation that we have from faculty, staff, students and industry." This was echoed in several other comments.

One of the most interesting program responses were from those that used systems that include student self-assessment in tandem with faculty assessment: "Part of the system is self-evaluation, which I think is interesting when you have such a diverse student population. Some students can be very self-critical, others are the exact opposite." Another commented that "many times, the students hurry through this and don't take the time to fill it out (the self-assessment) completely. Towards the middle of a semester they seem to catch on because not only does their grade get effected but they start to realize the importance of reviewing their day in lab."

The use of Canvas allows instructors to enter assessments at the time that they occur, and also allows the students to immediately review their performance. Another web-based aid is the

Sesame application: “This allows students to take pictures of their practical exam submissions and can be an excellent reference to look back and correlate their grades to their food.” It appears that the use of technology in food labs is effective in providing quality feedback. Another respondent stated that “The best aspect is that every day students have an opportunity to meet one on one with their instructor and discuss what they did well and where there is room for improvement.”

A number of comments focused on how providing this feedback and creating a dialogue assisted the students in improving performance, as a common tone to the responses reflected that “It takes time to do a good job but in the end the feedback is one of the most important elements we use.” Another similar statement read, “Between the rubric and the comments, the student can see where they are growing and what their areas of improvement are,” and another stated that “they clearly outline for the student and the instructor what the objectives are on a daily basis.” Some also felt that the system was consistently helpful to the instructor because it clarified grade justification: “Once we began using the rubric system instead of a checklist grades became easier to justify. All labs must use the same rubric in a program, we made it work for front and back of the house.” Other positive comments include: “the best thing is the halo tendency, allowing focus on areas of improvement” and “the best thing about the grading rubrics is that students know up to the minute where they stand.” Several other comments stressed the importance of communicating expectations and the rubric to students, so they have a thorough understanding of performance expectations for assessment: “Clarity of understanding of Rubric by students. I am in favor of sharing/walking through it with the students, so they know exactly what they are being evaluated, so they can do a self-assessment before the evaluation.”

Challenges

The challenges that respondents discussed often focused on a need for consistency from faculty in terms of paying attention to detail and providing effective feedback to students: "The system works as long as the instructor is fully engaged and observant during the laboratory/ practical portion of the class." Some felt that the most challenging component was generating enough support and participation throughout the faculty, staff, and industry for the process to be successful: "Consistency is a challenge, because instructors don't evaluate the same way." Some faculty had criticisms based on the format, and some felt that sometimes faculty relied too much on the rubric because it is only a "tool and it doesn't give you accurate feedback about the character of the student." Some felt that the challenging nature of their programs, and the short amount of time available, makes the assessment process difficult. One had issues with coming up with a rubric for specific items in pastry: "It is difficult at times evaluating every student and documenting it." Communicating with the student was also identified as a challenge, as "the most challenging thing is that a student may be defensive regarding an honest critique. In the past, I have had students say, well I thought that it was great when they clearly had need for improvement." Another respondent interestingly declared that "fewer formal rubrics are much better. This industry is about constant communication and feedback which NEEDS to happen in an informal verbal manner because that is what happens in a restaurant kitchen." Others also discussed student deficiencies: "I find that most of the students underestimate the amount of prep required to pass!" There were some that lamented the lack of academic prowess of students in the specific disciplines of math and English as a challenge. Furthermore, in terms of the emotional element that can sometimes be at stake in evaluation, one respondent complained that

"negative evaluation and student's self-evaluation can tend to be divisive and one must use facts not feelings."

Summary of Research Question Results

1. Does culinary/foodservice program have system in place to evaluate student performance in foodservice laboratory classes? Respondents reporting their program had a system in place to evaluate students in all laboratory classes amounted to 91%, while 9% reported there was system in place for some classes. There was no significant variation (p=1.0) by position.
2. Are faculty allowed to develop and use their own standardized form (rubric) to evaluate student performance in laboratory classes with appropriate approval by administrator? There were three possible responses, yes (68%), sometimes (18%), and no (15%). This was the research question that showed significant (p=0.0078) differences by position. Administrators were more likely to report no (38%), followed by administrators with teaching responsibilities (20%), and faculty (5%).
3. Does the student have the ability to respond to instructor student performance evaluation? Overall 97% of respondents reported yes and only 3% reported no. There were no significant (p=0.2066) differences by position, but it was interesting that 100% of the faculty reported yes on this question.
4. Is the student performance evaluation effective in determining whether students have mastered competencies and outcome objectives for the foodservice/culinary program? Overall, 82% of respondents reported yes and 18% reported no. No significant (p=.03406) difference in the responses by position held was found. It was interesting that the administrator with teaching responsibilities (89%) had the highest reported yes responses.

5. Are the student performance evaluations helpful in evaluation and revision of the curriculum? Overall, 84% reported yes and 16% reported no. The administrators (92%) had the highest reported yes responses. No significant differences (p=0.6367) were found by position.
6. What are the best and most challenging aspects of the assessment process? The respondents summarized their thoughts in the following comments: Evaluating food products can be difficult in separating personal preferences from acceptable standards; You have to keep in mind that you are evaluating a product or performance based on industry standards; Subjectivity equals difference and that's the art of what foodservice culinary instructors do; We should use the same form for every lab class, but we have had a hard time adapting them to different classes, especially dining room instruction that is so different from cooking labs. Also, we need to improve so that they are not too subjective; Ensuring the faculty members use them in an appropriate manner. The practice must remain a constructive process to benefit student outcomes; The students often do not realize how much their actions translate into the work they complete. Performing these evaluations and then having a discussion with the students allows the students to either improve or to keep up the good the work. Students truly appreciate knowing how their work is perceived and how this translates into their grades and understanding.

Chapter 5

This chapter is presented as a discussion and summary of the study and research questions, as well as of the basic implications from the analyzed data. This chapter also discusses the general limitations of the study and recommendations for future research.

Overview

The purpose of this pilot study was to analyze the perceptions of respondents in terms of how their respective culinary arts programs evaluate student performance in foodservice/culinary laboratories. It is hoped that the study and its dissemination may stimulate consideration by administrators, faculty, chefs, and staff teaching foodservice/culinary courses. Because many chef educators may not have a background in education, the information provided in the study's literature review on assessment and culinary education will serve as a starting place for some to understand educational assessment. It is also hoped that the completion of this study might prompt thoughts on the various approaches to standardized assessment of student performance in culinary laboratories and classes.

The prevailing research investigating the use of nonacademic (general education) forms of assessment is primarily focused on performance measuring systems in student laboratory classes (Gareis & Grant, 2008), that place emphasis on meeting outcomes and industry objectives. Roache, Ware, and Ware (2014) view assessment as an integral part of the evaluation as to whether students have achieved competency in a specific skill set. Allen (2005) discusses the danger that assigned grades could be invalidated, as they may not be built on solid principles of measurement. Although the literature related to this subject matter offered limited research related to actual practice, in terms of theory, there is a large amount of material available, including assessment forms, structure, administration, data review, usage of results (closing the gap, meeting outcomes (Bisset et al., 2009), and reform of courses or curriculum.

The results were limited to programs that have been accredited by the American Culinary Federation Educational Foundation (ACFEF). The ACFEF has set culinary industry expectations and competency guidelines, through which all potential ACFEF programs evaluated via an on-site accreditation and reaccreditation. These competencies require observation and measurements documenting that students have demonstrated the practical abilities to perform specific skills. The ACFEF has aligned their accreditation standards with the Council for Higher Education Accreditation, finding a use for implementing more traditional approaches into technical education (ACFEFAC, 2018). While culinary arts programs are essentially playing catch-up, there must be more nuance to this training beyond just demonstrations of skill that students simply repeat multiple times. A control system must be in place that can fairly and effectively evaluate student ability in the execution of tasks, whether in written or practical form, that allows the instructor and student to know the level of success a student has attained at certain intervals. Therefore, all ACFEF programs must meet similar verification standards.

With this sense of standardization in mind, the first research question asked about forms of measurement used by respondents in their respective programs. The responses were not completely a positive indicator, as the additional comments suggested that this was the case in some classes and courses but not in all laboratory classes. The results confirmed that the ACF programs have systems in place where student performance is measured, but participation was clearly not uniform throughout all laboratory courses and programs. Prior to the study, the quality of measurement methodologies in these programs was not clear. The responses were consistent, but the comments on the qualitative questions were especially illuminating.

All respondents indicated their programs were still ACFEF accredited programs, and respondents also indicated that various programs had additional accreditation with seven other

agencies. All of the studied programs verified that they had systems in place used to measure student performance in the laboratory classes: 95.54% had a means to evaluate students for all classes and 4.46% indicated the system was in place for some classes. This last statistic could be a result of faculty in higher education being greatly limited, at times, due to a lack of industry experience (Linn, 2000). The ACFEF requires that laboratory classes have a method in place for evaluation. Roche et al. (2014) state that assessment should be faculty-driven, which "helps instructors refine their teaching practices and grow as educators" (67). An additional question asked, "how often the student performance evaluation is performed?" In response, 71.62% verified that evaluations are done every class period, 13.51% reported weekly evaluations, 6.76% reported that evaluations were performed twice a semester, 4.05% once a semester, 1.35% weekly, and 2.7% by other participants. The other participants indicated that each instructor does evaluation differently. This might reflect the claim that teachers require adequate training in order to use effective methods of assessment and to accurately communicate the grading practice that assess students (Allen, 2005). Allen (2005) goes on to suggest that the grading practices of instructors can be influenced by practices from their own past instructors. If educators are uncomfortable with assessment processes, then this should indicate to administrators that professional development needs should be addressed.

Evaluation in culinary laboratories involves the rating of students, by an observer, using specific scoring criteria while students demonstrate skills. Evaluation also involves judging student behavior when applying their ability to execute a skill, with the results being used to make a significant decision about the student (Grummon, 1997). Factors like effort, attitude, and motivation should not be determining factors in terms of grade evaluation, as they are hard to define and measure (Stiggins, Frisbie, & Griswold, 1989). Brown and Shavelson (1996) suggest

that performance-based evaluation should use six or more assessments in order to achieve an accurate display of student ability in specific areas. The evaluation using assessment must establish whether a student needs to meet an absolute standard or a relative one. Bluhm et al. (1992) argue that to be an effective educator in the field, one must be equipped with practical skill in order to help students better understand the needs of customers and employers. Teachers are provided with a great degree of latitude in terms of how to evaluate student knowledge and skills, but they also need to consider how assessment can assist students to actually learn about themselves in relation to the skills required for the workplace (Grummon, 1997). Evaluation design must give students feedback for the purpose of future development, and laboratory classes tend to use performance-based criteria in assessing the results with higher instructional efficiency. With this in mind, one who has limited experience in the culinary arts industry can effectively train and educate individuals preparing to enter the workforce, as they are then equipped with enough practical skills to be competent (Lingg, 1996).

It is hoped culinary teachers and administrators might utilize information gleaned from the evaluation of the study in order to evaluate their own teaching methods and techniques. Student performance might ultimately provide an indication of areas where an instructor might improve in terms of delivering content focused on competency. Individual instructors might learn what forms of instruction work more effectively, and why that might be the case. It is also hoped that instructors might share these best practices among colleagues in order to address student learning needs.

Limitations

Because the study focused on ACEEF culinary programs and the sample was small, the results should not be generalized to all culinary schools. The general lack of detailed prior

research on the execution of laboratory evaluation in culinary programs also is a limitation. The exploratory approach used for this study is essentially a starting point. The study was not able to request copies of assessment tools from respondents due to confidentiality issues, and this reality also proved to be a limitation. It is not clear from the survey responses if a single universal assessment tool is used for evaluating every laboratory class, or if specific tools are used for specific classes. It was beyond the scope of this study to evaluate the educational philosophy behind respective assessment processes, particularly in terms of whether those processes might be focused more on formative, summative, holistic, or analytical assessment methods.

Recommendations

Future research might focus on compiling a list of best practices of culinary laboratory assessment rubrics as well as the concept of different rubrics for different levels of classes. Another focus might be to examine the processes used in culinary programs to update competencies and learning outcomes as well as rubrics. How students are made aware of program expectations and assessment rubrics might be another study.

Further consideration should be given to research focusing on the skill sets of the evaluator and the continuing education assessment process. Those transitioning to teaching often possess practical real-world experience in running food operations, and therefore may have a better understanding of the industry expectations of graduates but not understand educational assessment. Instructors with education degrees who transitioned immediately into teaching in hospitality, culinary or family consumer science programs with limited industry experience might understand the educational assessment process without the awareness of industry skill expectations. Analyzing methods and effectiveness of in-service training might provide ideas for improving these processes.

The survey questions and, specifically, the qualitative comments provided an opportunity for participant administrators, administrators with teaching experience, and culinary instructors to reflect on the evaluation/assessment process. It is hoped that the survey might be a starting point for a dialogue on the assessment of student laboratory performance which might aim of help it become more consistent, fair, and unbiased as possible. It is hoped that stakeholders might continue this work in order to make the assessment process more effective in the future.

References

Allen, J. (2005). Grades as valid measures of academic achievement of classroom learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 78*(5), 218-223.

Altinay, A., Paraskevas, A., & Jang, S. (2015). *Planning research in hospitality and tourism* (2nd ed.). London, England: Routledge.

American Culinary Federation Education Foundation Accrediting Commission, ACFEFAC. (2018). Retrieved from: www.acfchef.org.

Andrade, H.L., & Du, Y. (2005). Student perspectives on rubric-referenced assessment. *Practical Assessment, Research and Evaluation*. Retrieved from http://PAREonline.net/getvn.asp?v=10&n=3.

Antun, J., & Salazar, J. (2005). The impact of learning transfer outcomes on employed culinary arts graduates' perceptions of career success. *Journal of Culinary Science & Technology, 4*(1), 75-87.

Arter, J., & McTighe, J. (2001). *Scoring rubrics in the classroom: Using performance criteria for assessing and improving student performance*. Thousand Oaks, CA: Corwin Press, Inc.

Baker, S. (2014). *Faculty perceptions as a foundation for evaluating use of student evaluations of teaching*. (Unpublished doctoral dissertation). University of Vermont. Burlington, VT.

Balanced Assessment for the Mathematics Curriculum (1999). Elementary grades assessment package 1. Retrieved from https://hgse.balancedassessment.org/.

Bass, K.M., & Glaser, R. (2004). Developing assessments to inform teaching and learning. *CRESST /Learning Research and Development Center*. University of Pittsburgh. Pittsburgh, PA.

Bennett, D., Milicevic, B., & Dolan, R. (1998). Educators in the workplace. A "how to" guild. Retrieved from ERIC Document Reproduction Service No. ED426286.

Bergen, D. (1993). Authentic performance assessments. *Childhood Education*, *70*(2), 99-102.

Bissett, R., Cheng, M., & Brannan, R. (2009). A qualitative assessment of culinary science competencies defined by the research chefs association. *Journal of Culinary Science & Technology*, *7*(4), 285-293.

Block, C.R. (2015). Curriculum, instruction & assessment equals evaluation of student learning based on classroom assessment standards. *International Journal of Liberal Arts and Social Science*, *3*(4), 81-109.

Bluhm, H. P., Drew, C., & Blankenship, C. (1992). Educational partnerships: The Utah education technology initiative. *Technological Horizons in Education Journal*, *20*(2), 85-89.

Brefere, L., Drummond, K., & Barnes, B. (2008). *So, you want to be a chef? Your guide to culinary careers*. New York, NY: Wiley.

Brookhart, S. M. 1993. Teachers' grading practices: Meaning and val-ues. *Journal of Educational Measurement* 30 (2): 123–42

Brookhart, S. M. (1999). The art and science of classroom assessment. *The Missing Part of Pedagogy*. Retrieved from ASHE-Eric Higher Education Report. *27*(1).

Brown, BL. (2003). CTE and work-based learning. *ERIC Clearinghouse on Adult Career and Vocational Education*. Columbus, OH: ERIC Digest. ED482334.

Carnegie Mellon. (2016). Teaching excellence & educational innovation, assess teaching & learning. Carnegie Mellon University. Pittsburgh, PA.

Carroll, C.M. (2007). *Leadership lessons from a chef*. New York, NY: Wiley.

Chalmers, I. (2008). *Food jobs*. New York, NY: Beaufort Books.

Chandler, J., Weber, M., Finley, D., & Keith, M. (2006). Evaluating teaching effectiveness in a quantity food laboratory setting. *Journal of Culinary Science & Technology*, *4*(1).

Chappuis, J., Stiggins, R., Chappuis, S., & Arter, J. (2011). Classroom assessment for student learning doing it right–Using it well (2nd ed.). *Pearson Assessment Training Institute*. pp. 1-12.

Cheng, B., Wang, M., Yang, S.J.H., Kinshuk, & Peng, J. (2011). Acceptance of competency-based workplace e-learning systems: Effects of individual and peer learning support. *Computer & Education*, 57(1), 1317-1333.

Chesser, J.W., & Cullen, N.C. (2018). *World of culinary management, the: Leadership and development of human resources* (6th ed.). London, England: Pearson.

Cizek, G. J. (1995). The big picture in assessment and who ought to have it. *The Phi Delta Kappan 77*(3), 246-249.

Conley, D. (2015). A new era for educational assessment. *Educational Policy Improvement Center United States.* Epaa Aape. *23*(8), 1-41.

Cooper, A. (1997). *A woman's place is in the kitchen: The evolution of women professional chefs* (1st ed.). New York, NY. Van Nostrand Reinhold.

Darling-Hammond, L. (2010). Evaluating teacher effectiveness. *Center for American Progress*. Retrieved from https://www.americanprogress.org/issues/education-k-12/reports/2010/10/19/8502/evaluating-teacher-effectiveness/.

Dornenburg, A., & Page, K. (2003). *Becoming a chef*. New York, NY: Wiley.

Economist. (2012). Higher education, not what it used to be. *The Economist*. Retrieved from: https://www.economist.com/united-states/2012/12/01/not-what-it-used-to-be.

Ewell, P.T. (2002). An emerging scholarship: A brief history of assessment. Retrieved from http://catalogimages.wiley.com/images/db/pdf/0787959456.01.pdf.

Frary, R.B., Cross, L.H., & Weber, L.J. (1993). Testing and grading practices and opinions of secondary teachers of academic subjects: Implications for instruction in measurement. *Educational Measurement Issues and Practice, 12*(30), 22-30.

Frey, B., & Schmitt, V. (2007). Coming to terms with classroom assessment. *Journal of Advanced Academics, 18*(3), 402-423.

Fuchs, L.S., (1995). Connecting performance assessment to instruction: A comparison of behavioral assessment, mastery learning, curriculum-based measurement, and performance assessment. Eric Digests E530. ED381984.

Gagne, R. M. (1962). The acquisition of knowledge. *Psychological Review, 69*(4), 355-365.

Gagne, R. M. (1970). *The conditions of learning* (2nd ed.). New York, NY: Holt, Rinehart & Winston.

Gagne, R. M. (1973). Learning and instructional sequence. In F.A Kerlinger (Ed.). *Review of Research in Education* 1. pp. 3-33. Itasca, IL: Peacock.

Gagne, R. M. (1985). *The conditions of learning and theory of instruction* (4th ed.). New York, NY: Holt, Rinehart & Winston.

Gareis, C.R., & Grant, L.W. (2008). *Teacher-made assessments, how to connect curriculum, instruction, and student learning*. Larchmont, NY: Eye On Education.

Gareis, C.R., & Grant, L.W. (2014). Assessment literacy for teacher candidates: A focused approach. Retrieved from https://files.eric.ed.gov/fulltext/EJ1085699.pdf

Gersh, I. (2011). *Culinary industry practitioners and educator' perceptions of core competencies for a four-year bachelor's degree in the culinary arts*. (Unpublished doctoral dissertation). Seton Hall University. South Orange, NJ.

Groves, R., Fowler, F., Couper, M., Lepkowski, J. Singer, E. & Tourangeau, R. (2009). *Survey Methodology.* Hoboken, NJ: Wiley.

Grummon, P.T.H. (1997). Assessing students for workplace readiness. *Centerfocus.* N(15). Retrieved from https://files.eric.ed.gov/fulltext/ED404485.pdf.

Guskey, T.R., & Bailey, J.M. (2001). *Developing grading and reporting systems for student learning*. Thousand Oaks, CA: Corwin Press.

Hakansson, A. (2014). Assessing and evolving the progress plan in quantitative thinking for the bachelor program in culinary arts and food sciences. *Lararlardom Conference*. Karlskrona, Sweden: Blekinge Tekniska Högskola.

Harrington, R.J., Mandabach, K.H., VanLeeuwen, D.W., & Rande, W. (2004).A survey of the control process in foodservice laboratory classes. *Journal of Hospitality & Tourism Education*, *16*(1), 47-55.doi:10.1080/10963758.2004.10696784.

Hartel, R.W., & Foegeding, E.A. (2004). Learning: Objectives, competencies or outcomes? *Journal of Food Science Education, 3*(4), 69-70. doi: 10.1111/j.1541-4329.2004.tb00047.x.

Heaviside, S.C., & Faris, E. (1994). Public secondary school teacher survey on vocational education. *Institute of Education Sciences*. National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=94409.

Hegarty, J. (2004). *Standing the Heat*. New York, NY: Routledge.

Hertzman, J. (2006). *Identifying the characteristics of and quality indicators for associate degreed culinary arts program: A survey of educators and industry*. (Unpublished doctoral dissertation). Retrieved from https://digitalscholarship.unlv.edu/rtds/2657

Hertzman, J., & Ackerman, R. (2010). Evaluating quality in associated degree culinary arts programs. *Quality Assurance in Education*, *18*(3), 209-229.

Hertzman, J., & Maas, J. (2012). The value of culinary education: Evaluating educational costs, job placement outcomes, and satisfaction with value of associate degree culinary and baking art programs graduates. *Journal of Culinary Science & Technology*, *10*(1), 53-74.

Hertzman, J., & Stefanelli, J. (2007). Developing quality indicators for associated degree culinary arts programs: A survey of educators and chefs. *Journal of Quality Assurance in Hospitality and Tourism*, *9*(2), 135-158.

Hillocks, G. (1986). Research on written composition: New directions for teaching. Retrieved from https://eric.ed.gov/?id=ED265552.

HKR (2009). Strategi 2009-2014, Strategiska utmaningar i ett nytt högskolelandskap. [Strategy 2009-2014, Strategic Challenges in a New Landscape for Higher Education] Kristianstad: Kristianstad University. Retrieved from http://www.hkr.se

Horng, J., & Lu, H. (2006). Needs assessment of professional competencies of F&B /hospitality management students at college and university level. *Journal of Teaching in Travel &Tourism*, *6*(3), 1-26.

Hu, M.M. (2010). Discovering culinary competency: An innovative approach. *The Journal of Hospitality Leisure Sport and Tourism*, *9*(1), 65-72.

Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practices studies in higher education. *Studies in Higher Education, 40*(2), 350-367.

Jones, E., & Voorhees, R. (2002). Defining and assessing learning: Exploring competency-based initiatives. Retrieved from https://files.eric.ed.gov/fulltext/ED473245.pdf.

Jooste, S.M. (2007). A curriculum framework for continuing professional development in culinary studies. (Master's thesis). Retrieved from http://scholar.sun.ac.za/handle/10019.1/2083.

Kizlik, B. (2012). Measurement assessment and evaluation in education. Retrieved from https://drjj.uitm.edu.my/DRJJ/OBE%20FSG%20Dec07/OBEJan2010/DrJJ-Measure-assess-evaluate-ADPRIMA-n-more-17052012.pdf.

Ko, W., & Chung, F. (2015). Learning satisfaction for culinary students: The effect of teaching quality and professional experience. *International Journal of Vocational and Technical Education*, *7*(1), 1-13.

Lingg, M. (1996). Training for job-skill confidence. *Journal of Career Development*, *22*(4), 261-271.

Linn, R.L. (2000). Assessment and accountability. *American Educational Researcher*, *29*(2), 4-16.

Madaus, G., & O'Dwyer, L. (1999). A short history of performance assessment: Lessons learned. The Phi Delta Kappan, 80(9), 688-695. Retrieved from http://www.jstor.org/stable/20439537

Mandabach, K.H. (1998). *American professional culinary education prior to World War II: The history of the founding of the Washburne Trade School chef's training program*. (Published doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9828326).

Marso, R.N., & Pigge, F.L. (1988). An analysis of teacher-made tests: Testing practices, cognitive demands, and item construction errors. Retrieved from https://eric.ed.gov/?id=ED298174.

McMillan, J.H. (2000). Fundamental assessment principles for teacher and school administrators. *Practical Assessment, Research & Evaluation, 7*(8). Retrieved from https://eric.ed.gov/?id=EJ638496.

Mitchell, R., Woodhouse, A., Hepinstall, T., & Camp, J. (2013). Why use design methodology in culinary arts education? *Hospitality & Society, 3*(3), 239-260.

Moeller, B., & Reitzes, T. (2011). Integrating technology with student-centered learning. *A Report to The Nellie Mae Education Foundation*. Retrieved from https://eric.ed.gov/?id=ED521868.

Muller, K.F., VanLeeuwen, D.W., Mandabach, K.H., & Harrington, R.J. (2009). The effectiveness of culinary curricula: A case study. *International Journal of Contemporary Hospitality Management*, *21*(2), 167-178. https://doi.org/10.1108/09596110910935660.

National Postsecondary Education Cooperative. (2002). Defining and assessing learning: Exploring competency-based initiatives. Retrieved from https://nces.ed.gov/pubs2002/2002175.pdf.

Nykiel, R. (2009). *Handbook of Marketing Research Technologies*. New York, NY: Haworth.

Pashler, H., Bain, P., Bottge, B., Graesser, A., Koedinger, K., McDaniel M., & Metcalfe, J. (2007). Organizing instruction and study to improve student learning, a practice guide. Retrieved from https://files.eric.ed.gov/fulltext/ED498555.pdf

Patah, M.O., Issa, Z.M., & Nor, K.M. (2009). Food safety attitude of culinary arts based students in public and private higher learning institutions. *International Education Studies*, *2*(4), 168-178.

Paulson, K. (2001). Using competencies to connect the workplace and postsecondary education. *New Directions for Institutional Research*, *110*, 41-54.

Powell, R.A. (2005). Integrating practice into engineering education. Retrieved from file:///C:/Users/camll/Downloads/integrating-practice-into-engineering-education.pdf

Reeves, D. (2008). Leading to change-effective grading practices educational leadership. *Teaching Students to Think*, *65*(5), 85-87.

Resnick, L.B., & Wirt, J.G. (1996). *Linking school and work: roles for standards and assessment*. Retrieved from https://eric.ed.gov/?id=ED389915.

Riggs, M.W., & Hughey, A.W. (2011). Competing values in the culinary arts and hospitality industry: Leadership roles and managerial competencies. *Industry and Higher Education*, *25*(2), 109-118. Retrieved from http://digitalcommons.wku.edu/csa_fac_pub/55.

Ritchie, J.R., & Goeldner, C.R. (1994). *Travel and Hospitality Research*. Hoboken, NJ: Wiley.

Roche, C., Ware, B., & Ware, C. (2014). *Culinary Educators' Teaching Tools & Tips* (1st ed.). Dubuque, IA: Kendall Hunt.

Rubistar (2008). *Assessment, Test and Evaluation RubiStar*. Create rubrics for your project-based learning activities. Retrieved from http://rubistar.4teachers.org/index.php.

SAS Version 9.3 (2011). SAS Institute.

Scotland, M. (2006). Higher education program curricula models in tourism and hospitality education: A review of the Literature. Retrieved from https://files.eric.ed.gov/fulltext/ED492761.pdf.

Shavelson, R.J. (2007). *A brief history of student learning assessment: How we got where we are and a proposal for where to go next.* Washington, DC: Association of American Colleges and Universities.

Sims, R (2004). *Bivariate data analysis: A practical guide*. New York NY: Nova Science.

Stevens, D.D., & Levi, A.J. (2005). *Introduction to rubrics: An assessment tool to save grading time, convey effective feedback, and promote student learning*. Sterling, VA: Stylus.

Stiggins, R.J., Frisbie, D.A., & Griswold, P.A. (1989). Inside high school grading practices: Building a research agenda. *Educational Measurement Issues and Practice, 8*(2), 5-14.

UNESCO (2014). Technical Vocational Education and Training. Retrieved from http://www.unesco.org/new/en/newdelhi/areas-ofaction/education/technical-vocational-education-and-training-tvet/.

VanLandingham, P.G. (1995). The effects of change in vocational, technical, and occupational education on the teaching of culinary arts in America. Retrieved from https://eric.ed.gov/?id=ED382832.

Voorhees, R. A. (2001). Competency-based learning models: A necessary future. *New Directions for Institutional Research, 2001*(110), 5-13. https://doi.org/10.1002/ir.7.

Wahlgren, M., & Ahlberg, A. (2013). Monitoring and stimulating development of integrated professional skills in university study programs. *European Journal of Higher Education, 3*(1), 62-73.

Wang, Y. F. (2002). The development and changing of higher hospitality education in Taiwan. *Journal of Human Ecology and Technology, 3*(4), 453-464.

Wiersma, W., Jurs, S. (2009). *Research methods in education: An introduction* (9th ed.). London, England: Pearson.

Wiggins, G. (1993). *Assessing Student performance: Exploring the purpose and limits of testing*. Hoboken, NJ: Wiley.

Wiliam, D. (2013). Assessment: The bridge between teaching and learning. Retrieved from http://www.ncte.org/library/NCTEFiles/Resources/Journals/VM/0212-dec2013/VM0212Assessment.pdf

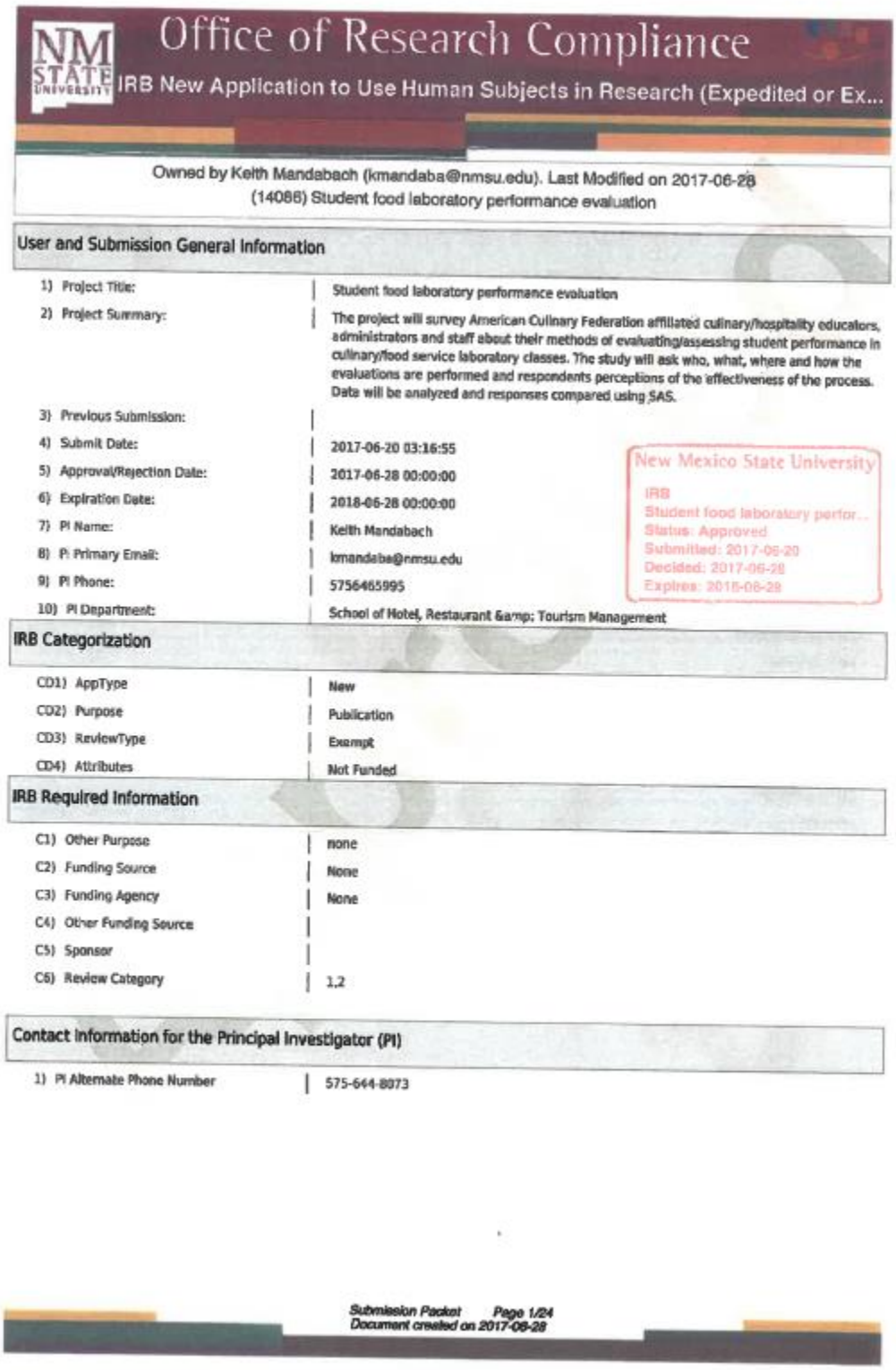
Wolf, K., & Stevens, E. (2012). Ten things every professor should know about assessment. *The Journal of Effective Teaching, 12*(2), 65-79.

Yang, J. J. (2001). Study of the competence requirement of the 21th Chinese chefs. *Journal of Human Ecology and Technology, 3*(2), 237-254.

Zhang, Z., & Burry-Stock, A. (2003). Classroom assessment practices and teachers' self-perceived assessment skills. *Applied Measurements in Education, 14*(4), 323-342.

Appendix A

IRB Approval



Office of Research Compliance

IRB New Application to Use Human Subjects in Research (Expedited or Ex...

Owned by Keith Mandabach (kmandaba@nmsu.edu). Last Modified on 2017-06-28
(14086) Student food laboratory performance evaluation

User and Submission General Information

1) Project Title:	Student food laboratory performance evaluation
2) Project Summary:	The project will survey American Culinary Federation affiliated culinary/hospitality educators, administrators and staff about their methods of evaluating/assessing student performance in culinary/food service laboratory classes. The study will ask who, what, where and how the evaluations are performed and respondents perceptions of the effectiveness of the process. Data will be analyzed and responses compared using SAS.
3) Previous Submission:	
4) Submit Date:	2017-06-20 03:16:55
5) Approval/Rejection Date:	2017-06-28 00:00:00
6) Expiration Date:	2018-06-28 00:00:00
7) PI Name:	Keith Mandabach
8) PI Primary Email:	kmandaba@nmsu.edu
9) PI Phone:	5756465995
10) PI Department:	School of Hotel, Restaurant & Tourism Management

New Mexico State University
IRB
Student food laboratory perfor...
Status: Approved
Submitted: 2017-06-20
Decided: 2017-06-28
Expires: 2018-06-28

IRB Categorization

CD1) AppType	New
CD2) Purpose	Publication
CD3) ReviewType	Exempt
CD4) Attributes	Not Funded

IRB Required Information

C1) Other Purpose	none
C2) Funding Source	None
C3) Funding Agency	None
C4) Other Funding Source	
C5) Sponsor	
C6) Review Category	1,2

Contact Information for the Principal Investigator (PI)

1) PI Alternate Phone Number	575-644-8073

Submission Packet Page 1/24
Document created on 2017-06-28

Additional Author Information

In addition to the individuals listed above, who will be additional author(s) if the research results in publication?

2) First Name	miller
3) Last Name	Cari
4) Department	SHRTM
5) MSC	3hrtm
6) E-mail Address	chefcam@nmsu.edu
7) Telephone	575-646-2879
8) First Name	
9) Last Name	
10) Department	
11) MSC	
12) E-mail Address	
13) Telephone	
14) First Name	
15) Last Name	
16) Department	
17) MSC	
18) E-mail Address	
19) Telephone	

Appendix B

Survey Questionnaire

Evaluating Student Performance in Foodservice/Culinary Laboratories

1. By clicking 'I agree' below signifies your electronic signature and understanding that you fully understand the above study, what is being asked of you in this study, and that you are signing this voluntarily.
   I Agree

2. From the list below, select the most suitable response that fits the role you hold within your organization
   Administrator
   Administrator with Teaching Responsibilities
   Faculty
   Staff
   Other: _____

3. Does your culinary/food-service program have a system in place to evaluate student performance in food laboratory classes?
   Yes, for all laboratory classes
   Yes, for some classes
   Not sure
   No, we do not have a system in place

4. Is a standardized form utilized for the student performance evaluation in food laboratory classes?
   Yes
   No

5. Is a rubric(s) utilized for the student performance evaluation?
   Rubric in foodservice/culinary laboratories is defined as a scoring guide used to evaluate the quality of student laboratory performance. Rubrics usually contain evaluative criteria, quality definitions for those criteria at particular levels of achievement, and a scoring strategy which is usually numerical.
   Yes
   No

6. Are faculty allowed to develop and use their own rubrics to evaluate student performance in food laboratory classes with appropriate approval by administrations?
   Select all that apply
   - Yes
   - No
   - Sometimes
   - Not Sure
   - Other: _____

7. Does the student evaluation form include a rubric that addresses student performance in:
   - Laboratory
   - Lecture and Laboratory
   - Online, Lecture and Laboratory
   - Other: _____

8. Whom is responsible for completing student performance evaluations?
   - Program Administrator
   - Program Administrator with Teaching Responsibilities
   - Instructor
   - Chef
   - Other: _____

9. What areas of performance does the rubric form address to evaluate student performance?
   Please check all responses that apply
   - On time attendance
   - Proper culinary attire
   - Proper sanitations practices
   - Cooking / production competencies (execution of: knife skill, cooking methods, butchery, …)
   - Speed in completing production tasks
   - Teamwork
   - Customer service
   - Language
   - Other: _____

10. How often is the student performance evaluation completed?
    Select the answer that best applies.
    - Every class meeting
    - Weekly
    - Monthly
    - Once a Semester (finals)
    - Twice a Semester (mid-term & finals)
    - Other: _____

11. How are students informed of their evaluation score on the rubric?
    - Face to face formal – verbally
    - Face to face formal – written
    - Grade book notification utilizing a Web Portal (Canvas, Blackboard, WEBCT…)
    - Email notification
    - Other: _____

12. Is there a method used to document the student has read and understood their performance evaluation?
    - Yes
    - No

13. Does the student have the ability to respond to the instructor student performance evaluation?
    - Yes
    - No
    - Student has the options to discuss with an administrator
    - Other: _____

14. Does the evaluator have the ability to attach comments to the student performance evaluation form?
    - Yes
    - Not
    - Other: _____

15. Do you feel the student performance evaluation system used in your program is an effective method to evaluate student performance?
    - Yes
    - Not
    - Other: _____

16. Do you think the student evaluation system improves overall student performance in laboratory classes?
    Yes
    Not
    Other: _____

17. Do the student performance evaluation rubrics effectively match industry expectations for a foodservice/culinary graduate?
    Yes
    Not
    Other: _____

18. Are the scores on the student performance evaluation helpful in assessing whether future foodservice managers or culinarians are prepared for their careers?
    Yes
    Not
    Other: _____

19. Is the student performance evaluation helpful in producing graduates who meet the needs of the industry?
    Yes
    Not
    Other: _____

20. Do the student performance evaluation rubrics match learning outcomes standards established for the culinary / food service program?
    Yes
    Not
    Other: _____

21. Is the student performance evaluation effective in determining whether students have mastered competencies and outcome objectives for the foodservice/culinary program?
    Yes
    Not
    Other: _____

22. Are the student's performance evaluations an effective method of evaluating instructor performance?
    Yes
    Not
    Other: _____

23. Are the student performance evaluations scores helpful in evaluation and revision of curriculum competencies?

    Yes
    Not
    Other: _____

24. Who had input on establishing the student performance evaluation form? Select all that apply

    Administrator
    Instructor
    Industry (Advisory Board)
    Student
    Staff
    Other: _____

25. Thank you for assisting us in completion of the survey. If you could share the student performance evaluation and rubrics with us it will assist in formulating an in-depth analysis on developing a hypothesis for future research studies on this subject.

    Attach Rubrics

26. Is your culinary program certified by an accrediting body? Check all that apply.

    American Culinary Federation
    ACPHA
    Accreditation Council for Business Schools and Programs
    Association to Advance Collegiate Schools of Business
    Accrediting Commission of Career Schools and Colleges (ACCSC)
    Accrediting Council for Continuing Education and Training (ACCET)
    Accrediting Council for Independent Colleges and Schools (ACICS)
    Other: _____

Appendix C

Respondent Comment

1. Done right it works! But here we don't do it often enough

2. The most demanding is that students are at different places in their learning schedule and the demands of the food service business.

3. originally the evaluations are very subjective. We are trying to create evaluations that have direct competencies relating to each lab class. Much easier to access the student based on very distinct outcomes in a list. The student is given the syllabus with the outcomes listed and knows what they need to accomplish in that lab. I started almost two years ago as a new instructor and the grading was very subjective. We needed a more precise way to measure the student success.

4. The system sets clear expectations for the student and the instructor.

5. It forces Instructors to evaluate students on a daily basis.

6. Part of the system is self-evaluation, which I think is interesting when you have such a diverse student population. Some students can be very self-critical, others are the exact opposite.

7. I only use it for practical exams. It can be hard in pastry to come up with a 4-point scale on appearance of a chocolate chip cookie, etc. More advanced items are easier to scale and grade actually. Sometime the simple things really just need to be good/bad with a description in the middle but 4 point or 5 point can be challenging, especially if you are also talking about multiple options

8. Seeing students skills progress through the evaluation process is most satisfying. I have had student come back after passing a class and said that they appreciated the "one on one evaluation process used, it helps in other classes.

9. N/a

10. Evaluations systems are nice to have but are only a tool. It doesn't give you accurate feedback about the character of the student.

11. The system works as long as the instructor is fully engaged and observant during the laboratory/practical portion of the class.

12. Consistency from chef instructor to add chef instructor

13. Due to the challenging nature of the program and the short amount of time that we have each student, I find that most of the students underestimate the amount of prep required to pass!

14. The rubric forms help with maintaining consistent grading from one student to the next. They are detailed and time-consuming but worth it.

15. Many times, the student hurry through this and don't take the time to fill it out completely. Towards the middle of a semester they seem to catch on because not only does their grade get effected but they start to realize the importance of reviewing their day in lab.

16. The most challenging thing is that a student may be defensive regarding an honest critique. In the past, I have had students say, well I thought that it was great when they clearly had need for improvement.

17. Best- accountability challenging-time

18. it is difficult at times evaluating every student and documenting it.

19. the most challenging component is generating enough support and participation from throughout the faculty, staff and industry for the process. The best thing is the amount of support and participation that we have from faculty, staff, students and industry.

20. Between the rubric and the comments, the student can see where they are growing and what their areas of improvement are.

21. The best aspect is that every day students have an opportunity to meet one on one with their instructor and discuss what they did well and where there is room for improvement. The most challenging aspect is timing.
22. Less formal rubrics is much better. This industry is about constant communication and feedback which NEEDS to happen in an informal verbal manner because that is what happens in a restaurant kitchen.

23. Clarity of understanding of Rubric by students. I am in favor of sharing/walking through it with the students, so they know exactly what they are being evaluated, so they can do a self-assessment before the evaluation.

24. Best- they clearly outline for the student and the instructor what the objectives are on a daily basis. Challenge-consistently us by faculty. - attention to detail and providing feedback to students

25. The Sesame application allows students to take pictures of their practical exam submissions and can be an excellent reference to look back and correlate their grades to their food

26. Using Canvas, we can grade in the kitchen on the fly, real time. Students usually have feedback before they get home from school. Canvas attendance scoring does not allow for a sliding scale of attendance performance (i.e. 15 minutes late verses 1.5 hours late).

27. The best thing is the halo tendency, allowing focus on areas of improvement.

28. Keeping standards updated

29. Evaluating food products can be difficult in separating personal preferences from acceptable standards. You have to keep in mind that you are evaluating a product or performance based on industry standards.

30. Subjectivity = difference and that's the Art of what we do.

31. The most challenging aspect is having entry level students who do not have a basic understanding on mathematics or reading or writing comprehension. It is getting worse in America

32. We should use the same form for every lab class, but we have had a hard time adapting them to different classes, especially dining room instruction that is so different from cooking labs. also, we need to improve so that they are not too subjective.

33. Ensuring the faculty members use them in an appropriate manner. The practice must remain a constructive process to benefit student outcomes.

34. Negative evaluation and student's self-evaluation can tend to be divisive. must use facts not feelings.

35. The most challenging thing about our performance evaluation system is making sure all adjunct instructors continue using them on a consistent basis.

36. It takes time to do a good job but in the end the feedback is one of the most important elements we use.

37. the best thing about the grading rubrics is that students know up to the minute where they stand

38. Once we began using the rubric system instead of a checklist grades became easier to justify. All labs must use the same rubric in a program, we made it work for front and back of the house.

39. Having a standardized form gives instructors the ability to assess students using the same criteria across the curriculum. Consistency is a challenge, because instructors don't evaluate the same way.

40. It is consistent.

41. I feel that the only challenging part of student evaluation is to keep the critique as it relates to industry standards as opposed to being too objective.

42. The students often do not realize how much their actions translate into the work they complete. Performing these evaluations and then having a discussion with the students allows the students to either improve or to keep up the good the work. Students truly appreciate knowing how their work is perceived and how this translates into their grades and understanding.