EVOLVING CURRICULAR MODELS IN CULINARY ARTS: AN INSTRUMENTAL CASE STUDY OF A TECHNICAL FIELD

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The purpose of this research study was to examine how chefs and other individuals in the food industry understood the field of the culinary arts. This study used an instrumental case study with purposeful sampling of multiple cases. Through a series of open-ended interviews using snowball-sampling strategy that concluded with 45 participants sharing their experiences in culinary education and employment, several themes emerged across all of the interviews: (1) Disempowerment of those who have been successful in the culinary arts; (2) Conflict in the field; and, (3) Needs of employers not being met. Following the analysis of the data, two research questions were inductively formed: (1) How do the participants' understandings vary based upon the three models (apprenticeship, associate degree, and baccalaureate degree) of culinary education? (2) How do these themes vary depending upon the three models of culinary education? What resulted was thick description of the impact of the three models of formal chef education has had on the field of culinary arts, followed by the potential in the development of the baccalaureate degree model as it represented an opportunity for field redefinition in culinary arts. This study produced a set of data revealing that current culinary education has become one that has bred disempowerment, continued conflict in the field of culinary arts, and left needs unfulfilled related to technical skills required for successful employment. What has been offered in this research is the potential for a transformation facilitated within a baccalaureate degree that could intertwine both technical skills and academic knowledge.

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Dedicated to Ina May Gaskin: http://inamay.com/ whose paradigm redefinition demonstrated what could be accomplished when one recreated existing boundaries, broke down problematic and prohibitive rules while creating exceptional outcomes through the mastery of advanced technical skills. Ina May Gaskin changed the direction of my life, as I learned the power of moving *into* the pain.

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Introduction

Statement of the Problem

The initial establishment of culinary arts as a vocational or semi-professional occupation has problematized models for culinary education, and this has led to ongoing field tensions that are still in evidence today. The conceptualization of culinary arts as a vocational or semi-professional occupation shaped the emphasis, curriculum, and eventual control of culinary training. What began as on-the-job mastery of the classical culinary canon through exposure and replication eventually developed into a formalized apprenticeship program approved by a federal agency (U.S. Department of Labor) through the efforts of a national culinary arts trade group called the American Culinary Federation (Grubb, 1997; Hoachlander, 1998; Hyslop-Margison, 2000; Lewis, 1998). This licensure with the U.S. Department of Labor represented the first formal involvement made by the federal government in culinary arts training. Prior to apprenticeship registration, culinary arts training was self-monitored by the profession. Ongoing federal involvement altered the content, location, instructor qualification, and outcome of culinary arts training, according to the oral interviews in this research project. This study chose to examine how conceptualizations of the field have impacted the formation and transformation of culinary education and the potential for future conceptualizations.

The model that was implemented initially in the U.S. was apprenticeship, which is a method of skill acquisition as well as an enculturation process whereby the student acquires the systemic values of the guild they are attempting to join (Wolek, 1999).

While apprenticeship programs existed prior to the established federal agreement, the formalization with the U.S. Department of Labor signified the first step in the institutionalized federal certification of a culinary curriculum. Federal investment in vocational education began with the implementation of the *Smith-Hughes Act of 1917* and was intended to provide an avenue for training students in vocational skills-based education to meet the needs of the business community (Wirth, 1972). Public support came from trade organizations, businesses, and legislators who recognized the utility of vocational education (Gordon, 1999; Hyslop-Margison, 2000; Kantor, 1986; Levesque et al., 1995; Wirth, 1972). Ongoing business support continued as the model shifted to the associate degree model often situated within a vocational or community college setting.

The belief that students should be trained vocationally for immediate job placement was an unchallenged assumption until concerns arose in the 1980's that such a strictly reductionist training ideology could limit a student's long-range abilities (Carnevale, 1991; Grubb, 1997; Copa & Moss, 1983; Silberman, 1983). With the *Carl D. Perkins Vocational Educational Act of 1990* (*Perkins II*), a key philosophical shift in orientation for vocational education outcomes occurred, as this act introduced three new aims: integration of academic and vocational education; articulation between segments of education engaged in workforce preparation (Tech Prep, for example); and, closer linkage between school and work (Lynch, 2000).

The impact of adding academic transfer outcomes into vocational culinary arts training altered the curricular content of the Associate of Applied Science (AAS) degree as demonstrated in the AAS program analysis provided below. Two separate program goals (academic and vocational) were devised within the associate degree model,

creating outcomes that strayed far from the original narrow focus of workplace skill development. Vocational scholarship has urged a national discussion on the heuristics of vocational education from those within (Rojewski, 2002; Grubb, 1997); however, little national discussion at the associate degree level has been undertaken. The curriculum for the associate degree model was adopted from the apprenticeship logbook, with additional coursework added to the degree to ensure compliance with state and regional accreditors. Academic transfer courses were those most easily accepted by university articulation evaluators, and in the case of culinary arts, the courses most often articulated were hospitality and nutrition courses as these fields have terminal university degrees (Ph.D.) as well as extensive licensing regulations for the practice of sub-specialties (Registered Dietician). In contrast, the chef has no mandate for formal education. The impact of federal preferences on the culinary curriculum has led to the steady erosion of curricular control by chefs, producing a field instability (Fligstein & McAdam, 2011) which are articulated and recognized in the oral interviews by those practicing within the associate degree model.

Dissatisfaction expressed by the interviewees in the data shifted when those who spoke to the development of a third model. As will be demonstrated in this study, an emerging model will be successful if these new challengers re-frame the existing boundaries, alter the limitations of a domain, forge new collaborations and define and control a new colonized “social space” (p. 19) as professionals.

Indicators of emerging field professionalization include the creation of specific abstract-based knowledge, the development of powerful trade groups who can define and control the content of their curriculum, and entering standards of both certification

and licensure systems which are now seen within the Baccalaureate model. What a professional *does* is different from a non-professional (Abbott, 1988), since application is its main purpose. New collaborations can be the prerequisite to public or legal claims and the start of the movement towards the abstract knowledge leading to self-autonomy, or self-governance required, a prerequisite for participation within the professional class.

Focus

The researcher in this study was interested in how chefs and other individuals in the food industry understood the field of the culinary arts. Through a series of interviews that concluded in 45 participants sharing their experiences in culinary education and employment, several themes emerged across all of the interviews. These themes were analyzed, and following the data, a research question was inductively formed. This research question formed a framework for examining what was shared in the interviews, centered around the three models of culinary education.

Purpose

The purpose of this study was to examine what has impacted models for culinary education, historically, politically and socially. By interviewing individuals in the field of culinary arts, the researcher was able to integrate perceptions of the current models and offer implications for future research in culinary education.

Methods

Interpretive Framework

An instrumental case study (Stake, 1995) was employed for this research. Multiple cases across different sites were utilized in order to address the specific focus

of how the culinary arts have been taught in the United States (Bogdan & Biklen, 1982; Creswell, 2012; Stake, 1995; Yin, 2009).

Qualitative Research Approach Used

Analytic induction was the method employed for this data collection. Following Robinson's (1951) modified version of analytic induction, the data focused on what has impacted the field of culinary education, historically, politically and socially. A hypothesis was formulated, and as more interviews were conducted, that hypothesis was revised. Once all interviews were transcribed, a research question was devised, based on the coding of the data.

Role of the Researcher

The researcher was situated within the field of the culinary arts. The education experience was based on the apprentice model, and the work experience included both the apprentice model and the associate degree model. Beginning with a gatekeeper in culinary education, the researcher was able to contact individuals recommended by the gatekeeper and subsequent interviewees so as to interview participants located in the field of culinary arts regarding the research focus. These interviews occurred in person at conferences and in offices, as well as over the telephone. Because the researcher had prior experience in culinary education, the interviews were held as conversations between two individuals who knew many of the existing structures in the culinary arts.

Participants

Using an opportunity, snowball-sampling strategy, individuals located in various roles within the culinary arts were recruited to be interviewed regarding their understandings of the field of the culinary arts. A total of 45 individuals participated, 34

men and 11 women. They ranged in age from 35 to 60 (M=53.3 years, SD=9.36 years), although the majority (52%) were in the 50-60-year age group. Volunteers received no remuneration for their participation. Most participants were White (85%); 15% described themselves as Hispanic. Participants described the main breadwinner in their household as an employer or manager (28%), a higher professional (20%), an intermediate professional (13%), or a lower professional (13%). Participants obtained varying levels of degrees and certifications. Table 1 shows their diverse background and experiences. Clearly, volunteer bias means that this sample is not representative of the diverse population of individuals involved in the culinary arts in the United States, and the specificity of the sample is acknowledged.

Table 1
Participant Characteristics (n=45)

Training Method Received	Apprenticeship Model	24
	Associate's Degree Model	9
	BS	1
	Unknown	11
Education Level Achieved	AAS/AOS	9
	BA/BS	10
	MA/MBA/MS	8
	JD/MD/PhD	9
	Unknown	9
Certifications Held	Certified Executive Chef	11
	Certified Master Chef	6
	Certified Pastry Chef	1
	Certified Hospitality Educator	2
	Certified Culinary Administrator	2
	Certified Culinary Educator	1
	N/A	12
Model of Current Employment	Apprenticeship	3
	Associate of Applied Science	15
	Baccalaureate Degree	18
	Food System	5
	Other/Not an Active Educator	4

Data Collection Procedures

Open-ended interviewing was conducted as the primary method for data collection. Following the method by Spradley (1979) of providing a grand tour question, each interview started with the following prompts:

- How were you trained as a chef, and what do you see as the strengths or weaknesses of that training model?
- How did you get involved in the food system from your background as a (chef, lawyer, scientist, etc.)?

These grand tour questions served as a stimulus to frame the conversation around the culinary arts and how participants have interpreted their background and work experiences in culinary education. During the interview, probing often yielded greater discussion and deeper stories (Schoenberg, 2002). The interviews were relaxed and followed a conversational pattern (Herbert & Rubin, 1995; Rubin & Rubin, 1995). The prompts attempted to identify the culture and elicit story telling about their own culinary training. As culture is often communicated through stories, the interviewer listened at length to extended talks through which cultural lessons are shared (Becker & McCall, 1990; Hummel, 1991; Rubin & Rubin, 1995).

A secondary method utilized a program analysis in culinary education offered by a variety of certified educational programs in the United States in order to provide an additional source of data regarding the current structure of culinary education.

Analysis Procedures

Using Braun and Clarke's (2006) phases of thematic analysis, all interviews were transcribed and coded using inductive analysis, a "process of coding the data without trying to fit it into a preexisting coding frame, or the researcher's analytic

preconceptions" (p. 83). All of the interview transcripts were uploaded and saved in Dedoose, a qualitative analysis software (Lewins & Silver, 2007; Silver & Lewins, 2011). Each interview transcript was read multiple times within the online software, as well as in print. Relevant sentences were coded using a color-coding tool within Dedoose.

Then the data was reviewed for themes using latent thematic analysis (rather than semantic thematic analysis). The themes were then defined and compiled to be reported in this study.

Strategies for Validating Findings

The strength of this data included the depth of the researcher's access within the chef-instructor community, as this provided insight and access into a rarely studied group. The large number of oral interviews over a four-year period of time also contributed to the richness of the data. The next stage of analysis included sharing the print interviews with peer chef-instructors who were asked to identify salient themes from six key interviews. Three separate chef-instructors and former colleagues read and coded the same six interviews. These peers identified the themes, and results were consistent with researcher's code identification, which was a validation through peer triangulation. The three primary themes were named (See Table 2 below) based on frequency. Finally, continual discussions between the researcher and participants provided additional levels of confidence in the coding of the data.

Lincoln (1995) proposed essential qualities of trustworthy research within the qualitative context. *Figure 1* identified the steps and procedures undertaken in this research project that corresponded with the different criteria identified by Lincoln.

Aligning the procedures conducted with the criteria to assess for rigor was a strategy to validate the qualitative research that was conducted in this study.

Criteria for Assessing Rigor or Trustworthiness in Research

Steps	Procedures
• Familiarity with problem: Providing the context for formulating the investigation • Identification of field instability and concerns held by those within each model • Shift from unstructured to structured interviews as the researcher's knowledge of problems developed • Immersion in data • Growing expertise in program analysis • Administration of apprenticeship and associate degree program provided observational advantage • Access to chefs within each model allowed for informal conversations eliciting their thoughts about each model • Structured interviews were read multiple times to ensure category coding was consistent • Codes were identified as themes based upon frequency • Peer Triangulation was conducted • Final coding count was provided	• Immersion into field of culinary arts: culinary school; professional kitchens; culinary tours; culinary administrator; culinary faculty member; • Oral interviews: unstructured to identify salient questions, structured to elicit answers from interviewees • Each interview was read multiple times in Dedoose as well as read in a printed form. • The entire database was coded twice using color coding to provide a visual chart showing designated colors for repeated themes • Relationship mapping through creation of visual packed code cloud • Program-of-study analysis of each certified ACF associate degree program coded curriculum content into culinary or non-culinary material, strengthening the interviewees concerns about the loss of control • Three separate chef-instructors were sent individual transcripts and asked to read and identify the key points. Results were consistent with researcher's code identification. • Demographic analysis

Figure 1. Criteria for assessing rigor (Lincoln, 1995) applied in this study.

Findings

Thematic analysis allowed for the identification of the relationships of themes within the three different models of culinary education including the significance of each code to the overall research project (Table 2). The final step included analysis of the themes and weaving together the data into a cohesive narrative that accurately portrayed the story.

This analysis showed that the participants were particularly concerned with the three main concerns regarding culinary education: (1) Disempowerment of those who have been successful in the culinary arts in the formation of models for culinary

education; (2) Conflict in the field; (3) Needs of employers not being met. Table 2 provides the frequency count of these prevalent themes.

Table 2
Frequency Counts for Themes from All Interviews

Themes and Subthemes that Emerged	Theme Frequency
Disempowerment • *Federal mandates removing training control from chefs* • *Changed restaurant industry*	
Total:	93
Conflict • *Emerging national chef group and existing (ACF)* • *Tensions between technical and academic education*	
Total:	87
Needs • *Professionalization of the field* • *Critical thinking about entire food system*	
Total:	57

Disempowerment.

The theme cited most often in the data was disempowerment. A total of 93 extracts were coded with this theme, making it the largest in the data set. Disempowerment was identified as loss of control over culinary training methods, curriculum, standards, as well as production within the kitchen as well. The participants expressed frustration with their positions within an altered restaurant environment, as well as the usurpation of expertise within the system of higher education.

There were many statements made regarding this theme. Quite a few examples from the interviews spoke directly to this concern. These examples highlighted their experiences and the impact that federal mandates removing training control from chefs and the changed restaurant industry.

> Our chefs weren't educators and they didn't understand the value of sequence of exposure and practice, their driving force was: I have an awesome recipe and they wanted to deliver it. (Associate Dean for Culinary Fundamentals and Assessment BS Degree program, Certified Hospitality Educator, Apprenticeship trained, Chef John, 2010)

> The cook isn't going to be able to get through the AAS program and graduate, so the person who graduates ends up being a bad cook, and they can't actually handle what happens once they get into the kitchen, and then we look bad

> because we are sending out these crappy students who can't function---they have no speed, no urgency, very little skill, little equipment knowledge….it is just bad all over, and now the state is pushing us to graduate more. (Chef Instructor AAS program, AAS degree training, Chef Nate, 2011)

> Like we've talked about when we were working on the academy idea, we have to have a way to direct the dabblers into one program---you know, they would actually be better able to complete the AAS degree since they may have better abilities to finish all the general education crap heaped on them, and maybe we could redirect the serious chef with aptitude towards a rewritten and better focused certificate…..but I don't know…The administrators don't listen to us, and I don't think I want to take this on. I'm getting ready to retire. What's the point? (Lead Chef Instructor, AAS program, Certified Executive Chef, Apprenticeship training, Chef Lou, 2011)

Conflict.

The next largest theme concerned conflict. This theme was coded 87 times, and reflected the field instability within culinary arts. Conflict was coded when participants expressed tension within the exercise of their domain. These examples highlighted their experiences and the impact of an emerging national chef group and existing (ACF) as well as tensions between technical and academic education.

> You look a fool when you can't cook. A real educational system would take out of the mix those who can't make it----mom and pop, the groupies---the ones who want a chef coat to look important. The accrediting commission needs to put their foot down and say: no I won't accredit you, no slipping of the training hours…..the co-op person takes an easy type job, graduates and thinks they are something because they haven't worked in the belly of the kitchen. (Lead Chef Instructor, BS program, Certified Executive Chef AAS training, Chef Keith, 2011)

> Something else most people don't realize---the large packing houses, where they are slaughtering hogs or beef, you've got one guy on an assembly line doing that all day long, he is the most efficient person anywhere. Throughout the years, everything is getting more streamlined to speed up production, to cut out the waste of trimming and fat removal…. Most of the pre-packaged meet has up to 8% of added liquid to it which extends the shelf life and adds color and weight to the product, but I've always said: give me an old meat cutter who is working at a steady pace, he will out cut the young guy cutting at a million miles a minute. (Lead Butcher at Whole Foods, Apprenticeship trained, Butcher Bob, 2014)

> Do you like the smell of peeled carrots? From an industry standpoint it is fairly recognized that there are a lot of culinary graduates with theoretical knowledge that don't have the skills at anything other than within the (low-level) cook range. The culinary schools didn't want to admit that their education was falling short of industry standards. In education, how does a 1-4 point rubric work when you are evaluating an easy-over egg? It is either easy over, or it isn't. Can somebody show me a 1.5 easy over egg? What would it even look like? (National chair for Apprenticeship programs, Director of Apprenticeship program, JD, Chef Cary, 2015)

Needs.

The final main theme concerned the needs of the field of culinary arts. This theme was coded when a participant discussed what the culinary industry was lacking, and what was needed to regain perceived rigor, and there were 57 times that this theme arose. The examples below describe the professionalization of the field and their critical thinking about entire food system

> I can tell you from 40 years in Washington, there is one interest group with the most power, and that is agriculture. It is often seen as the third rail of American politics---it is just so dis-proportionate. If what we ate didn't impose costs on anyone else, like the healthcare costs (references Mark Bittman's piece in the NYTimes: http://www.nytimes.com/2014/07/16/opinion/the-true-cost-of-a-burger.html)
> The national conference of nutritionists is sponsored by Kraft food
> http://www.npr.org/sections/thesalt/2014/05/14/312460302/how-food-companies-court-nutrition-educators-with-junk-food
> but yet at the other end is the trendiest, most easily satirized lifestyle of a celebrity chef selling $22 okra. (Ph.D., World Bank, Food Systems Professional, Mike, 2014)

> You look at society becoming more and more separated from food, not actively removing themselves from food---the thing is that when you look at the typical 18 year old who can't cook their way out of ramen noodles, in their didactic program where they are learning about nutrition, there is no real drive or push to have them learn basic cooking techniques, nothing to make sure they understand the food piece. (Chair, Department of Culinary Nutrition, BS program, RD, AAS, Chef Steve, 2015)

> Now you don't even need 7 years before you can test for the Certified Executive Chef test---standards there are slipping too. In the olden days they used to put the students in hotels, country clubs, things that would develop their

> potential….now we are putting bodies in slots. We have an externship where the student is in one station for two weeks, but that is almost a thing of the past because everyone is so short staffed----restaurants say they don't have the luxury because are so short funded. (Lead Chef, BS program, past president of Texas Chefs Association, AAS trained, Chef Doug, 2011)

Secondary Analysis

In order to strengthen the themes expressed by the chef-instructors on the loss of technical training, a programmatic examination was undertaken by the researcher. Triangulation, or utilizing more than one source of data in an investigation, strengthens the "research design to increase the ability to interpret the findings" (Thurmond, 2001, p. 253).

The programmatic analysis examined the curriculum and program content of each of the 147 certified Associate of Applied Science (AAS) degree culinary programs throughout the U.S. The researcher downloaded each AAS degree program course sequence from the websites of each college. The next step involved separating the coursework into two categories based upon interview themes: (1) Culinary lab courses/externship or internship courses in kitchens; and (2) Front-of-the house courses/general education courses. This task was accomplished through the researcher's knowledge of the field and verified through course descriptions found in course catalogs.

Using the counts for each category, a bar chart was generated to show the ratio of academic content to culinary content and strengthens the concerns of the chef-instructors, as 92% of all certified AAS degree programs in culinary arts required more academic content than culinary content (Figure 2).

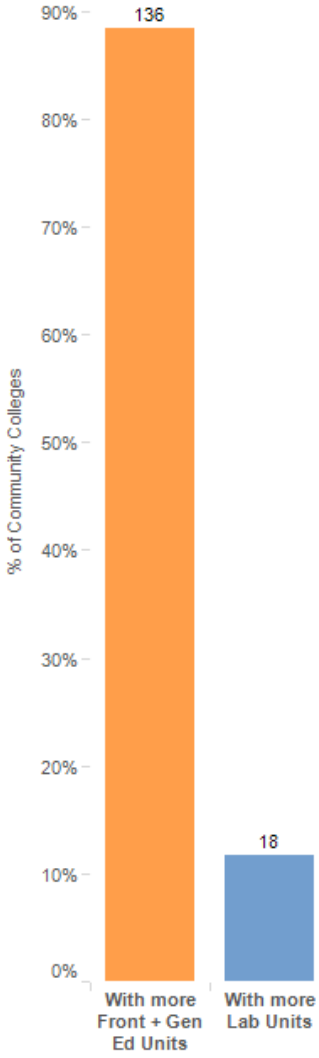

Figure 2. Ratio of culinary content to non-culinary content in AAS programs.

Discussion of the Impact of Various Models on the Field

Emerging Research Question

After the themes were developed, the data and responses elicited the recognition by the researcher that the three models of culinary education – apprentice, associate degree, and bachelor degree – have influenced how different individuals understand the field of the culinary arts. These models have historical, political and social implications

for culinary education in the US, so the research questions that arose inductively (Thomas, 2006) from the data became:

1. How do the participants' understandings vary based upon the three models of culinary education?
2. How do these themes vary depending upon the three models of culinary education?

Apprenticeship

The first major theme of apprenticeship was viewed as the strongest method for training future chefs because students learned while in the kitchen, thus being exposed to the difficulty of the work during their training period. All participants argued that this method had the strongest likelihood of preparing the student for the livelihood. One chef stated:

> Unfortunately for the industry the apprenticeship program has been disassembled. No question that it afforded more opportunity to reinforce skill development and practice and decent work ethics and technical knife and culinary skills… Apprenticeship represented a way of life…done every day 5 days a week, constantly. (Lead Chef, BS program, past president of Texas Chefs Association, AAS trained, Chef Doug, 2013)

The interviewees elaborated on their training, as the chefs who were interviewed fondly recalled their own apprenticeship training in great detail. Many complained that the high level of technical detail a chef was required to master was possible only as through the apprenticeship model.

> I started (my apprenticeship) when I was 14… The training I got you can't find that today. I had constant training—we worked the brigade system, 6 months in Garde Manager, 6 months in pastry, all those different stations, and in the final year, the chef I became a first commmis (sic) or a first cook, and I did national exams—state exams—both written and practical. The standard was so high, but half these culinary programs: take the money and run! (Retired Chef, leading country club, Certified Master Chef, Apprenticeship trained, Chef Glenn, 2012)

Some chefs expressed unease with the changing field, sensing that within the prior narrow model, a fraternity of craftsmen (sic) were forged through hard times. "I just don't see people going into this field like they did coming out of the apprenticeship system" (Retired Chef, leading country club, Certified Master Chef, Apprenticeship trained, Chef Glenn,, 2012). Other concerns included the loss of the specific culinary culture, with the perception of a decline in discipline as well as technical skills. Some drew attention to the changed restaurant industry itself, explaining that one does not pull whole carcasses off of railway trains any longer; instead, much of the food products are already received in a pre-fabricated manner with an accompanying loss of knowledge of the craft of butchery:

> Everything was hanging on hooks—180-240 lbs. and the guys would pull them off the hooks and roll them into the coolers, every 2-3 days, 8-10 sides of beef, the butchers and meat cutters would break them down into primal cuts (you'd always break down from quarters to the primals That's the way old school people did it. (Lead Butcher at Whole Foods, Apprenticeship trained, Butcher Brad, 2014)

The ideal of 'old school' training was repeated; however, some chefs explained that since the restaurant world has changed, training methods must also change because "knowledge expands over time." Melancholy infused the storytelling, including the powerfully strong bonds forged with their mentors as well as the bonds they created with their own apprentices, knowing of the obsolescence of apprenticeship.

In the early 1980's the ACF began to introduce a number of alterations to the apprenticeship program, including the addition of mandatory college courses in response to the new federal priorities (Chef John, 2011; Chef Glenn, 2012; Chef Doug, 2012). As the list of required academic courses grew, the advantages of the

apprenticeship training model diminished. Eventually the academic requirements for the apprenticeship program were nearly indistinguishable from the associate degree program curriculum. By the year 2000, fewer than ten apprenticeship programs were active (Chef Doug, 2012; Chef Glenn, 2011).

Associate of Applied Science Degree (AAS)

With the rise of the associate degree model, control of the curriculum began to shift from the chef-instructor to the higher educational systems experts (administrators) through the demands of federal oversight. The interview data revealed the perception of disparate goals between the system of higher education and those of culinary educators, which resonated with what other researchers have found regarding the melding of higher education and vocational education (e.g., Elliot, 2008; Farley et al., 1985; Kerka, 1995; Rojewski, 2002; Rojewski & Hill, 2014). This disjuncture reflected a broader debate between vocational and academic content, a debate whose outcome may be seen in the rise of the baccalaureate degree. The consequences of moving from mentored training to group training resulted in the perception of declining student technical skills, as the following quote illustrates:

> You can't drive a car in theory. What you have in the book has to go from the book to the brains to the hands. I look at the higher educational model: everyone wants to graduate from college, but if the knowledge isn't in your head, you will never make it! (Chef Doug, 2011)

The importance of the teaching and assessing fundamental techniques was mentioned with regularity, and the current training system (AAS) was implicated in producing a sub-quality outcome. In addition, the interviewees expressed frustration with a weak system of student skill assessment. As one interviewee explained:

> There needs to probably be a better system of evaluating someone's skill set…. We have a long way to go. Case in point: we have to rethink what is to be the knowledge of our profession. We need data---for example, an excel spreadsheet which says how many testers, number of passers, number of retakes, and then identify areas of weaknesses---weak soup, another weak soup, weak main course, weak timing skills---identify this with numbers. (Chef John, 2012)

This interview was an example of how some chefs viewed the impact of the change in models.

When the AAS curriculum was created, it was based on the apprenticeship program's logbook with all competencies taught to students. However, individual mastery of each skill set no longer shifted away from part of the requirements in order for a student to move to the next sequential cooking course, and it became possible that a student could pass a beginning course without mastering all of the technical content in that course.

Interview data revealed repeated concern with the addition of mandatory academic standards into technical program, as found in the federal *Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV).* While the emphasis on academic transfer credit became a new federal aim and policy expressed in *Perkins IV*, it never appeared to be supported by chef instructors in technical programs. The perception existed that new federal priorities expressed in *Perkins IV* removed program control from the domain of the chef and replaced their expertise with a more powerful system of higher education. Loss of control over program content was reflected in the following quote:

> We have to follow WECM rules, and ACF rules (American Culinary Federation) and God knows whatever else the coordinating boards heaps our way, and they have to take English and math and speech and whatever else the state thinks our students can pass……but that is just not happening. The cook isn't going to be able to get through the AAS program and graduate, so the person who

> graduates ends up being a bad cook---and they can't actually handle what happens once they get to the kitchen, and then we look bad because we are sending out these crappy students who can't function---they have no speed, no urgency, very little skill, little equipment knowledge….it just is bad all over. And now the state is pushing us to graduate more. (Chef Lou 2012)

Chef instructors explained that a robust culinary training program was replaced with coursework emphasizing academic transfer (hospitality courses) and general education (core) courses. These courses displaced existing technical content, creating the perception that technical proficiency was sacrificed for content not applicable to the practice of being a chef. With the addition of college transfer and core content, degree oversight responsibility was shared with non-culinary administration and accrediting agencies who lacked awareness about the specific demands of chef training and technical skill assessment. This further reinforced the idea that non-chefs defined the content for culinary training, and student outcomes suffered as a result of this loss of content focus.

Loss of curricular control may be understood as displaced legitimacy (Colyvas & Powell, 2006) from the erosion of power, and was expressed in the theme of disempowerment. Institutional theory described the concept of legitimacy as self-reproduction, or the collective movement "toward a common purpose (through which) legitimated activities are reciprocally interpreted and become habitualized" (p. 309). Legitimacy for academic core coursework and front-of-the house content was never obtained from the content experts, leading to the failure to establish a common purpose in training outcomes. The chef instructors recognized their loss of control, as the following quotations illustrate:

> The culinary schools added the academic faster than the academic added culinary. Academic programs say that the culinary is too expensive, so let's just

> do culinary management (front of the house) and then we don't have to worry about food, or kitchen equipment. It is a battle that we keep fighting every day. (Chef Lou, 2012)

Baccalaureate of Science Degree (BS)

The third model has emerged in the form of a new baccalaureate of science degree (BS). This newly formed approach seeks to redesign the meaning of culinary training by offering a higher-level degree. This new design includes the culinary content within the AAS degree, but broadens culinary training through the addition of areas of study within Culinary Science, Culinary Nutrition, and Food Systems/Applied Food Studies. These programs expand the scope and outcomes for culinary training into a larger occupational focus (Hoachlander, 1998) and are consistent with the desire to pursue deeper learning about the field or craft. A total of 82 references were coded in reference to this model.

The BS model may be viewed as the professionalization of culinary arts through three primary indicators: (1) Research into the science of food preparation and the system American system of food; (2) the articulation of core competencies and needed knowledge domains for the field and; (3) the creation of curriculum, assessment, and national licensure systems controlled by chefs. The following interview expresses these points:

> There must be technical skills for the chef of the future...entrance permit, but still has to be that additional layer of the inquisitive mind, critical thinking skills. Here is a case in point: our associate's degree program is still very much modeled after the history of our profession of learning from master to apprentice model... I was taught by my master to replicate what he (sic) did...the same knowledge onto the next generation. This served our profession well, but we are at a point where that model is not good enough. We need to maintain that discipline of the technical skill itself--the motor skills--but the part we need more for our profession is to introduce the science.
> *How do you see that change happening*?

> We have to have a structure in place where the profession is represented as a profession. There needs to be a probably a better system of evaluating someone's skill set as a practicing or identifying the skill set is...we have a long way to go...Case in point...we have to rethink what is to be the knowledge of our profession.
> Last year I spoke at a chef-to-chef conference with100 executive chefs from club and resort industry, and it rattled me to the core. I am a master chef, CMC---I am comfortable with my knowledge, and have confidence going into situations, but Nathan Myhrvold[1] showed us we must question everything and that we have to completely rethink our profession.
> Here is the scary part...if you were to be asking the question about licensure at the point.... when it started... if that point in time medicine was controlled by the hospitals.... just like food service is led by the National Restaurant Association (NRA). As long as the NRA is the leader...chefs (must) break from the ownership structure and stand on their own and can demonstrate and hold their own.
> (Chef Eric, Provost of Lead BS degree program, Certified Master Chef, AAS + Apprenticeship, 2012)

As a follow-up, the interviewee was asked what are the essential qualities of a well-made stock because these four qualities were drilled into a new student's head and taught as the foundation of the entire field. Though these qualities have been passed down through master to apprentice for decades, Chef 21 referenced the first published study examining the validity of the oral tradition in stock making (Krasnow, et. al, 2012) with special emphasis on the findings that the long-held prohibition on boiling stock was incorrect, as the protein content and viscosity were higher in a boiled stock. This finding was in direct opposition to the master/apprenticeship model of knowledge acquisition, and the first published example of how the field of culinary science is creating a new, professional domain.

The Culinary Institute of America (CIA), for example, began the process of offering the baccalaureate in the 1990's, utilizing the associate degree as the contact point for the heavy technical skill training, with the final two years of the four-year

[1] Ph.D. author of *Modernist Cuisine*, proponent of the application of science to cooking.

degree as the site of expanded academics (Chef Lou, 2010; Chef Eric, 2010; Chef Gerald, Vice President of Advancement and Business Development, BS program, Certified Master Chef, BS trained, 2010, 2014). The third and fourth year of the bachelor's degree became the time of specialization into applied food studies, culinary science, and culinary or baking and pastry management.[2] Master's degrees are being conceptualized at the time of this writing (Chef Lou, 2015; Chef Keith, 2012), further creating a new theoretical space. Abstract knowledge creation allows a professional to control their work task through the definition of the task itself. Generally speaking, national organizational power precedes the creation of this abstract knowledge base, and this organizational strength is often key in gaining boundary control. Through concentrated power, the standards for entry and training are codified and contained within the university space. This has helped to reconstitute the professions ever more exclusively on the basis of 'applied formal knowledge' or expertise (Brint, 1994).

A number of specialized research agendas within the field are challenging the long held assumption that culinary arts are a strictly vocational field, including establishing core competencies for research within the Research Chef Association, a national trade organization.[3] These competencies include technical skill sets but expand the knowledge domain beyond strict execution or culinary production. In an interview discussing the difference between the associate degree model and the baccalaureate degree model, a senior administrator explained:

> Certainly at our freshman level we still teach our student body stocks soups sauces. This is at the foundation level, so he or she has to understand what it takes to develop the gold standards in a sauce making, vegetable cookery and grains, but then as they develop further your curriculum has to shift and there are

[2] See Appendix C for detailed degree programs.
[3] See Appendix C for detailed competencies.

> so many programs out there today that in order to be to differentiate one has to add specializations.
> I think that is where a college will differentiate itself, that is why we have a culinary science, farm to table specialization, Latin specialization that is where that student once they come thru the Freshman and Sophomore years and get to the Junior and Senior years, the depth of knowledge will increase, and be ready for what the industry will deliver out there---it is consistently more challenging for young folks, it is highly competitive.
> If you look at the restaurant industry in 1978, it is unbelievable….in 1978 it wasn't that cool to be a chef and today you tell folks I'm a chef wow that's cool…. A lot has changed around that stigma about… (Chef John, 2012)

This new model was explained as situated within culinary arts first, as detailed by a program director of a Culinary Nutrition BS degree offered within a leading culinary school:

> Our program is *the* model and one of the things I find interesting about our program, is that there are some (schools) that are trying to incorporate more cooking, but we've always existed as culinary school first, so the first two years isn't healthy food, *it's food*…. Culinary school and then the students that have the proper mind for it and attitude and passion they transfer into it at the end of the junior year. (This degree will offer) the ability to analyze evidence based research and translate that through traditional culinary techniques. (Chef Steve, 2015)

In addition to four-year degrees, an alternative certification system to the American Culinary Federation appears to be emerging through the Pro-Chef Certification offered at the Culinary Institute of America.[4] Other interviewees emphasized the need for broadening the knowledge base in culinary arts:

> There is unprecedented interest in food and innovation and entrepreneurship…. companies are popping up left and right (focusing on) life kitchens, revolution foods driven by corporate leaders, folks that are not traditionally in the business, but they see opportunity. We have at the core our degree program of culinary arts and baking and pastry arts, but you have to mature and grow and offer folks that are out there, opportunities to grow along with them. If you look at the restaurant industry in 1978, it is unbelievable! In 1978 it wasn't cool to be a chef, and today you tell folks: I'm a chef and they say: Wow, that's cool! A lot has changed around that stigma! (Chef Gerald, 2011)

[4] See Appendix C for full list of competencies in each of the three levels of certification.

This chef reflected on the raising of the status of the chef as a career. This is a time to consider a transformation in culinary education, as it is ripe with opportunity.

Discussion

Research Focus and Questions

The purpose of this investigation was to examine culinary education in the US. What resulted was thick description of the impact of the three models of formal chef education has had on the field of culinary arts, followed by the potential in the development of the baccalaureate degree model as it represented an opportunity for field redefinition in culinary arts. The results of the oral interviews indicated a high level of dissatisfaction with the associate degree model for producing a relatively poor student outcome, particularly when comparing this model to the apprenticeship model. The quality of apprenticeship training was a universally accepted outcome within the data set, unlike the outcome within the associate degree model. These comments were coded as an expression for the needs of the industry not being met.

Additionally, the steady erosion of programmatic control by chefs over the content curriculum within the associate degree model through the addition of general education credits and front-of-the house management courses represents the expressed disempowerment of those who have been successful in the culinary arts in the formation of models for culinary education. Chefs no longer possess sufficient power to control the program of study as they see fit, yielding power to the associate degree system of general accreditation. Furthermore, the vocational contextualization of the associate degree model prevents the high-level abstractions that could articulate a stronger and more focused vision of culinary arts education.

Significantly, there was not a single interviewee who expressed confidence or satisfaction with the AAS model. Finding a solution within the systemic boundaries at the associate degree level seemed a task too frustrating and unsuccessful to attempt. Systemic boundaries included the absence of a strong national voice advocating discussion of program outcomes, the perceived burdens of regional accreditation, and the disjointed federal Perkins mandates, have reduced the confidence chefs hold in the success of this form. This lack of confidence reflects field instability that allows for stronger and more advanced programs to emerge at the baccalaureate degree level. This lends itself to the third theme, continued conflict in the field.

The demand for increasingly higher levels of education within the larger community is represented in the ongoing call for students to be able to think critically about their food environment and not merely learn how to replicate a dish, as was done in the apprenticeship model. Program analysis of the certified AAS culinary programs identified structural weaknesses in the culinary arts degree, providing additional evidence that concern with technical skills is a worthy topic of inquiry.

Implications

As the apprenticeship model was overtaken by the AAS model, the focus on the acquisition of technical skills declined both through the absence of a new classroom pedagogy and through the decline of culinary course content. The apprentice model of "'see one, do one, teach one' remains the current standard for the technical training" (Gearhart, et. al., 2012, p. 521), yet a number of additional elements must be present in order for the instructor to possess appropriately high levels of skills, and these include "(1) a high volume of cases with multiple opportunities for repetition, (2) skilled mentors

and teachers, and (3) long work hours" (p. 521). Furthermore, programmatic information can provide significant information to administrative personnel in positions of authority, who may not believe the concerns expressed by the chefs.

Research focusing on workforce education program design and assessment has revealed a gap between federal initiatives and practice (Kerka, 1995; Keiser, 2004; Farley, et. al, 1985; Rojewski, 2002; Rojewski & Hill, 2014). Chefs have often not been consulted when designing or evaluating technical programs, although teaching chefs possess specific knowledge of their field (Rojewski, 2002; Rojewski & Hill, 2014; Hoachlander, 1998; Farley et al., 1985; Lambeth et. al, 2009; Grubb, 1997; Farley, et. al, 1985; Lewis, 1998). Calls for further research undertaken by practitioners suggest a new approach to program design, evaluation and assessment may yield significant advances in understanding the unique needs of culinary arts training design and implementation.

Identification of an instructor's technical competency is underway in the fields of surgery, sport, chess, and general medicine. This presumes the ability of field practitioners to enter into national discussions leading to formal knowledge systems including assessment for strengthening the degree itself, yet the data from this research study identified the limitations of the AAS model for full investigation into this type of abstract knowledge generation. Future research may include alignment of the three systems of training from a national level, including the creation of a task force representing each of the three models in order to ensure that the emergent baccalaureate degree model incorporates the advantages of each of the two prior models into this new form. Expanding the conversation to practitioners of each model

will ensure a stronger form and a more robust field. While clear identification of technical skills required for practice as a chef including the adoption of more effective pedagogical methods may appear to limit a chef's domain through a proscriptive list of skeleton skill sets to master, if these skill sets are the beginning steps within a broader field of study, their proscriptive nature will enlarge the practice of culinary arts.

Limitations

This study was limited in the selection of participants. Purposeful sampling was utilized, which limits the voices provided by the interviews to those who were selected based on the gatekeeper and the snowball sampling that subsequently followed. Further, the researcher was positioned simultaneously as an insider and an outsider; an insider because of background and experiences, outsider because of her gender. Participants may have been less forthcoming if she did not know the field or show concern for its future, and follow-up questions were posed in part because of the experience and knowledge of the researcher. However, if the researcher had been a male, the information divulged may have been different. Therefore, while the rich description has been provided as well as a significant number of interviews, there could be more information that could be garnered if other researchers from different backgrounds, experiences, and gender followed this same line of research.

Additionally, this study did not include an examination of apprenticeship records from each state, as these records were not required to be kept and were not acquired during the course of this project, as every retired director had not kept the records.

Final Thoughts

Recent popularization of the field of culinary arts has broadened the type of incoming student. Previously, many students possessed extensive experience in a kitchen before attending culinary school and had highly developed schema (Ericsson, Chase & Faloon, 1980), allowing for their rapid comprehension of daily lessons. The student of today has not only little to no kitchen experience, but often has no experience with home cookery either. Many of the students encountered are second and third generations away from any knowledge of scratch cookery, having often never eaten a meal cooked from scratch in their entire lives. The implication of this demographic alteration necessitates an altered curriculum to provide for adequate schema development. K. Anders Ericsson's 'deliberate practice,' a theory of the structure and acquisition of expert performance in any given domain (Ericsson, 2004; Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Charness, 1994; Ericsson & Lehmann, 1996; Ericsson & Krampe, 1996; Ericsson & Lehmann, 1998), poses a promising avenue for identifying and achieving superior technical skills within the new culinary classroom. More research is needed in enacting a pedagogy of deliberate practice in the academic setting.

This study has produced a set of data that shows current culinary education has become one that has bred disempowerment, continued conflict in the field of culinary arts, and left needs unfulfilled related to technical skills required for successful employment. The shift from the time consuming and expensive model of apprenticeship to the development of the associate degree has necessitated a reconsideration of culinary education. What has been offered in this research is the potential for a

transformation facilitated within a baccalaureate degree that could intertwine both technical skills and academic knowledge.

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APPENDIX A

EXTENDED LITERATURE REVIEW

History of Culinary Arts Training

With the passage of the Smith-Hughes Vocational Education Act of 1917, the concept of vocational education became a funded educational priority. This piece of legislation held high levels of public support particularly from the business community for whom this training existed (Hoachlander, 1998; Hyslop-Margison, 2000; Manley, 2011; Rojewski, 2002), but also the support of both Congress and the President, who authorized investigative studies into the efficacy of vocational education (Hyslop-Margison, 2000; Grubb, 1997; Lewis, 1998). Preparing sub-baccalaureate students for immediate job placement ensured close partnerships between business and education, with businesses determining the required technical curriculum for their needs. "The Smith-Hughes Act specified particular vocational programs, created administrative procedures, and prescribed skills-based training programs for instruction in agriculture, trade and industries, and home economics (Tanner & Tanner, 1980)

While criticism existed (Dewey, 1916) the pull of 'simple' education proved to be strong, and the vocational educational model became an established piece within the higher educational model. Over time, the belief in the power of the American businesses to fully develop workers and provide them with meaningful work overcame early resistance to the criticisms (Gordon, 1999; Hyland, 1993; Dewey, 1916).

The Apprenticeship Model of Culinary Training

In the early 20th century much culinary training in the United States was informal in nature, reflecting the type of dining in America, in contrast to the highly formalized

European model. Few European restaurants existed outside of New York, New Orleans, and San Francisco, and this naturally inhibited the need for classically-trained chefs. Home cookery and regional American cuisine reflected both the dominant immigration patterns, as well as the regional *terroir* itself, and was a gendered occupation. Professional cookery in contrast, was the near exclusive province of men.

In cities with larger European migration, as well as populations sufficiently large to support the preparation of a more complex restaurant cuisine, mentoring of younger chefs occurred informally within French restaurants, highly exclusive country clubs, and four-star hotels. When formal training did occur, it existed through an apprenticeship model based on the unique demands of the classical kitchen and its extensive brigade system (See the Classical Brigade, Figure 3 page 20). As classically trained European immigrants continued to relocate to this country in the early part of the 20th century, they naturally developed culinary organizations for social and professional purposes; the most well-known of these organizations is called The American Culinary Federation (ACF). Through this guild, the apprenticeship program was formalized, curriculum was standardized, and regular competitions and testing became an essential component for the apprentice. Apprenticeship training was managed through chef-led local chapters under the supervision of a classically trained chef, often himself (sic) a European immigrant. The extensive time requirements for this mentoring as wells the limited number of classical kitchens in the United States restricted the need and availability of mass training.

Repeated phrases or ideas occurred within the oral interview data set as the chefs discussed their own apprenticeship days, or their times spent training an

apprentice. Apprenticeship is a rarely studied training method, lacking definitions on the essential characteristics of this training model. David F. Lancey proposes eleven key attributes of apprenticeship (See Table 5) beginning with a "formal, contractual relationship between a master and a novice of a specific duration, which is designed to serve two ends: to provide cheap labor (by the apprentice, Stella 2000:31) and/or fees to support the master's enterprise; and to afford the apprentice an opportunity to learn and receive certification for mastery" (Lancey, 2012, p. 113-4).

The daily life of a chef left little time for formal schooling, for the kitchen is a labor-heavy enterprise with grueling workdays often exceeding 15 hours. Reaching the goal of executive chef took many years with heavy kitchen workloads, leaving little time to pursue formal education. Success, both professionally and financially, was measured through the acquisition of technical as well as industry specific management skills such as purchasing and cost-management. Culinary success was possible until this decade without possessing an advanced degree. Additionally, given the blue-collar reputation of culinary arts, formal education was not only difficult, but often shunned (*Little active teaching*).

One Chef referred to his apprentices' as his "little monsters" (Chef 31, 2010), reflecting the time a sponsor would spend working with, overseeing, training, and correcting a student as a student cycled through the different 'stations' of a professional kitchen (*Prominent use of punishment and abuse in training apprentices*). Students demonstrated their station progress through the utilization of a logbook that contained detailed explanations of the requirements of the apprenticeship program, as well as extensive station competencies a student was required to master, but the sponsoring

chef was required to sign off on each skeleton skill to vouch that this student had mastered each individual skill. Often apprentices would spend months at a station such as the butchery station[5], practicing each skill hundreds upon hundreds of time.

Tasks are laddered or staged in difficulty: When one demonstrates proficiency with a boning knife, this step alone represents hundreds of hours' worth of practice and time spent on each of these different tasks. Mastery was evaluated on a Likert scale (1-4) but in practice, a student wouldn't proceed forward to the next station if less than a 2 were awarded. Practice was required for station advancement, and sponsor chefs knew that the only way for a student to improve their filet skills on a round fish was to spend weeks filleting round fish until they had mastered this task with advanced proficiency (Chef 3, 2011; Chef 31, 2010). As the fish a student learned to filet could be sold, proficiency was achievable without concern with the cost of product.

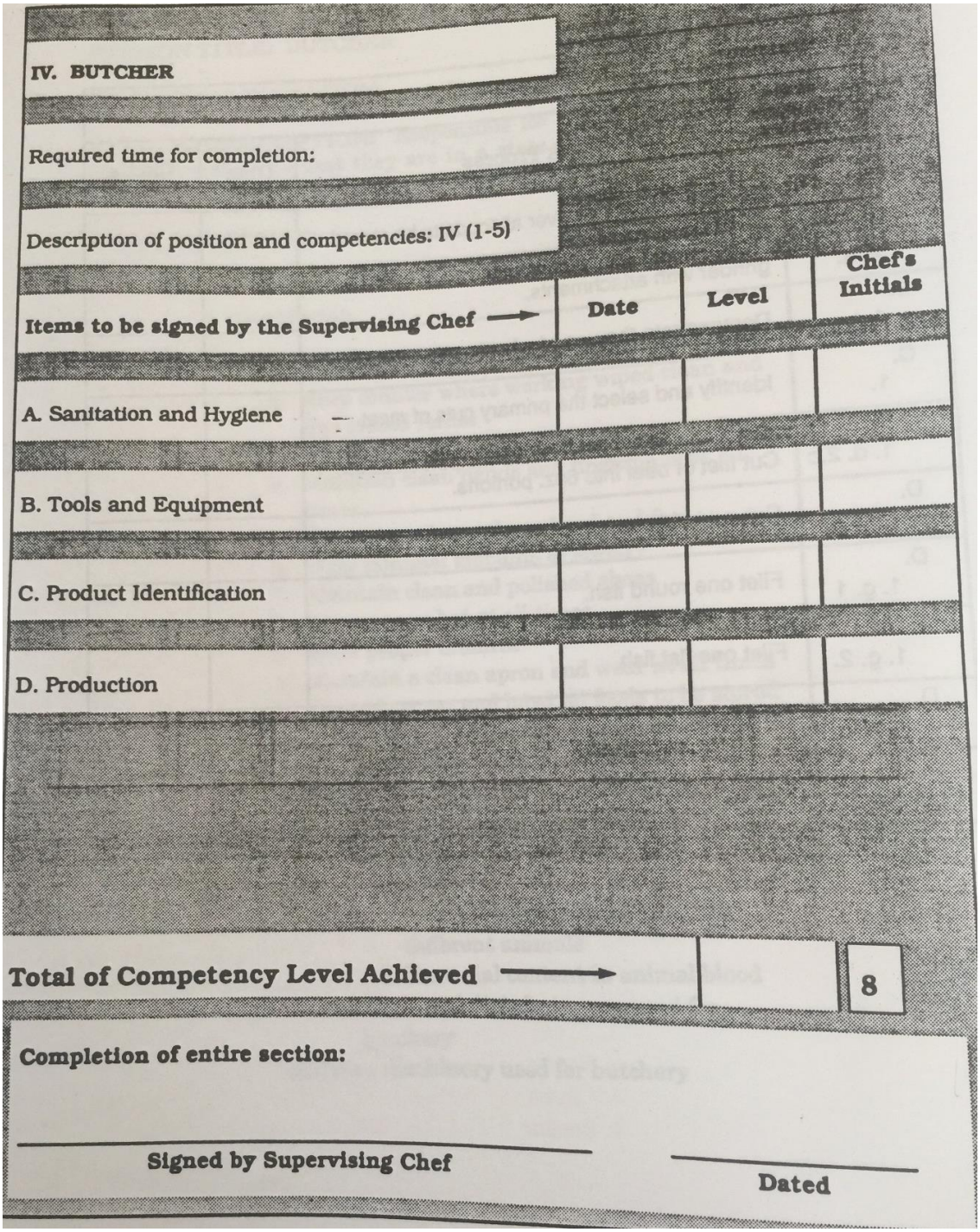
Students needed to make one entry a week including a visual representation of the work for that week's skill such as a photograph, a drawing, or a graph. On the back of each logbook page the "apprentice shall write an interpretation of a work process which could be a recipe or anything which somehow reflects and documents the work process. This must be the apprentices (sic) original work and has to be either handwritten or typed on a typewriter" (American Culinary Federation & United States Department of Labor Bureau of Apprenticeship and Training, 1993, p. [v]).).

After the supervisory chef signed and dated each logbook page, a representative from the ACF Apprenticeship Committee was required to sign each logbook page as well. A student was required to successfully master and document the acquisition of

[5] Box 3 presents the skeleton skill sets for the butchery station, for which 160 hours of time would be documented.

each skill set on each page for each station, complete all 6,000 hours of mentored training and pass the three non-academic courses in order to graduate (e*nds with a graduation ceremony*). See Box 2 for details.

Program oversight occurred within local chapters of the ACF. Sponsors were often chefs from large country clubs or hotels as volume and variety were required for full station training. Students were required to take three kitchen-focused courses: sanitation; hospitality management; nutrition for chefs. These classes were generally offered on the student's day off from the restaurant, and were closely aligned with the workplace training, offering pragmatic and applied instruction for immediate use in the kitchen. Applied foodservice sanitation, applied kitchen nutrition, and applied hospitality management gave the student additional knowledge, but the knowledge was tied to the expectation that a student would utilize these courses in their foodservice career. Educational sites included a multitude of different locations for these classes including kitchens of large food-service delivery companies, community colleges, and large restaurants of chapter chef. Each station competencies an apprentice was required to master with documentation occurring by the supervisory chef who initialed, dated, and evaluated the student using Likert scale of 1-4. Figures A-1(a-e) show the ACF butcher logbook of competencies and what is measured at each station.



IV. BUTCHER

Required time for completion:

Description of position and competencies: IV (1-5)

Items to be signed by the Supervising Chef →	Date	Level	Chef's Initials
A. Sanitation and Hygiene			
B. Tools and Equipment			
C. Product Identification			
D. Production			
Total of Competency Level Achieved →			8

Completion of entire section:

Signed by Supervising Chef

Dated

Figure A-1a.

STATION TITLE: BUTCHER

TIME SPENT IN STATION:

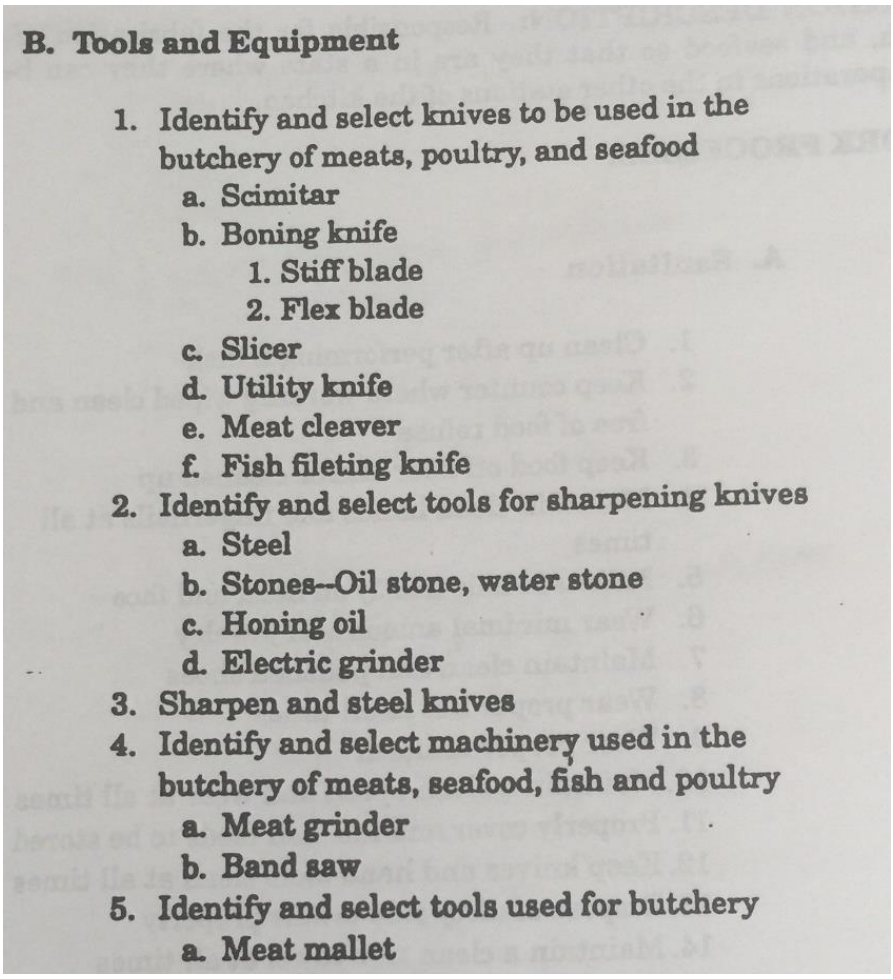
STATION DESCRIPTION: Responsible for the fabrication of meats, poultry, fish, and seafood so that they are in a state where they can be used for final preparations in the other stations of the kitchen.

WORK PROCESSES:

A. Sanitation

1. Clean up after performing a task
2. Keep counter where working wiped clean and free of food refuse
3. Keep food off floor and/or cleaned up
4. Maintain clean hands and fingernails at all times
5. Maintain hair neatly on head and face
6. Wear minimal amounts of jewelry
7. Maintain clean and polished shoes
8. Wear proper hat at all times
9. Wear proper uniform
10. Maintain a clean apron and wear at all times
11. Properly cover and label all foods to be stored
12. Keep knives and hand tools clean at all times
13. Dispose of dirty side towels properly
14. Maintain a clean side towel at all times
15. Maintain sanitary area for butchery
    a. Understand the nature of blood
       Example:
       1. Volatility of mixing bloods from different animals
       2. Bacterial content in animal blood
    b. Wash and disinfect areas used for butchery
16. Clean machinery used for butchery

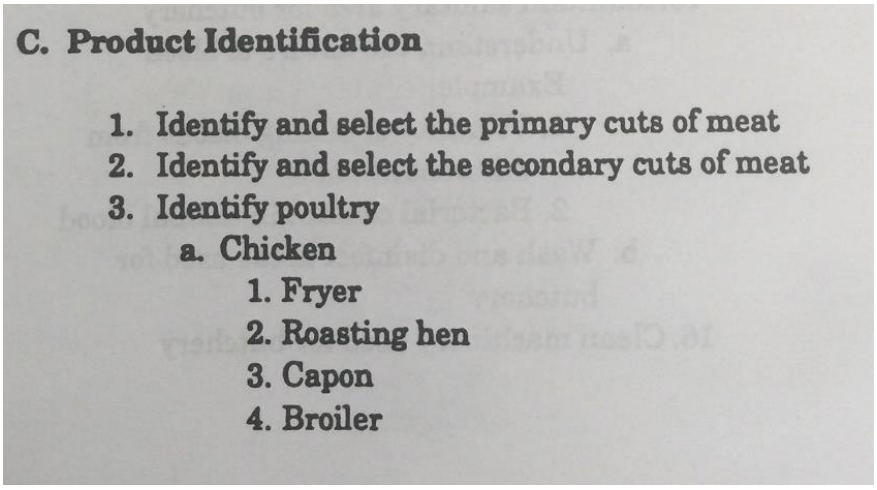
Figure A-1b. Sanitation station.



B. Tools and Equipment

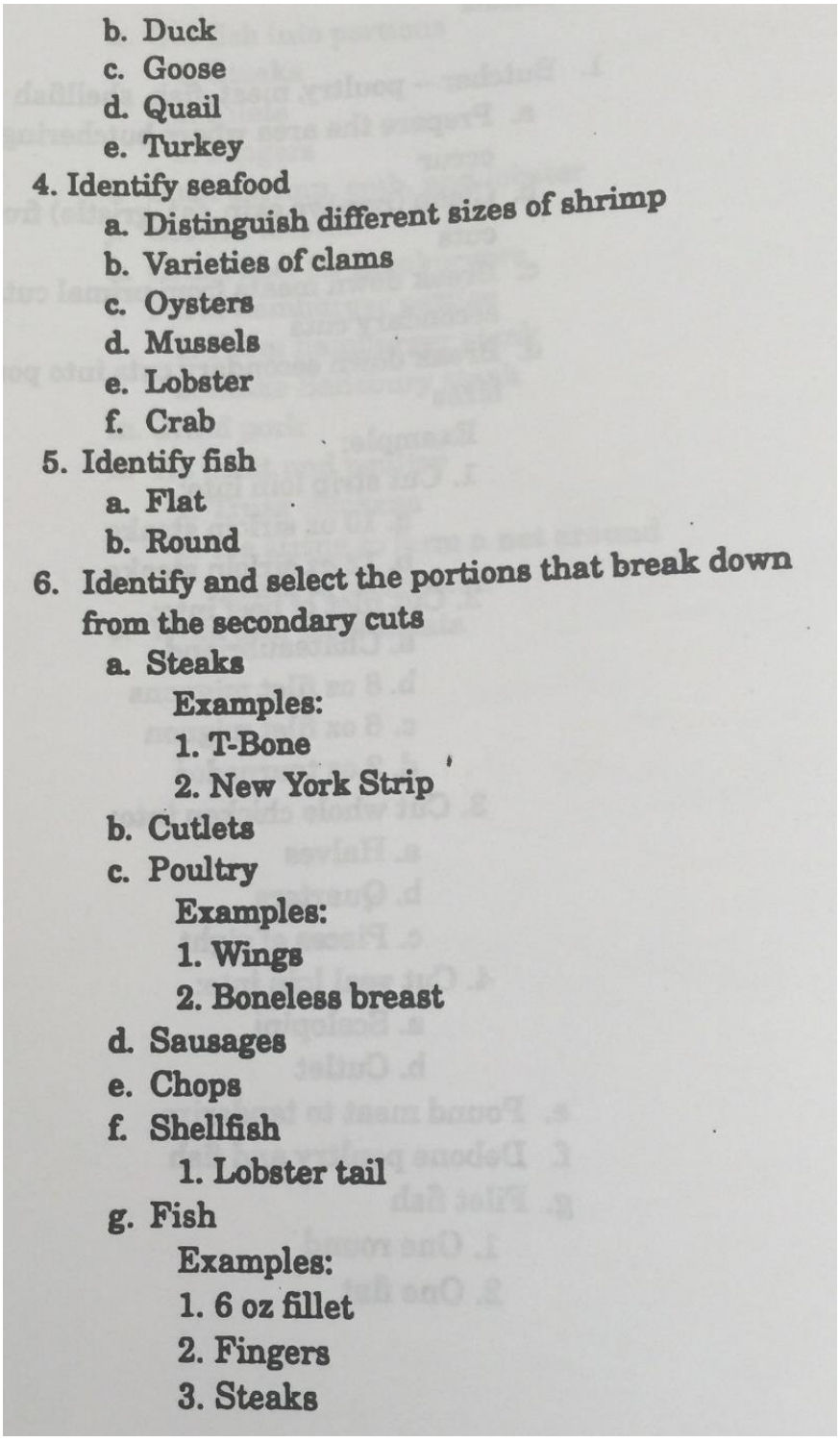
1. Identify and select knives to be used in the butchery of meats, poultry, and seafood
   a. Scimitar
   b. Boning knife
      1. Stiff blade
      2. Flex blade
   c. Slicer
   d. Utility knife
   e. Meat cleaver
   f. Fish fileting knife
2. Identify and select tools for sharpening knives
   a. Steel
   b. Stones--Oil stone, water stone
   c. Honing oil
   d. Electric grinder
3. Sharpen and steel knives
4. Identify and select machinery used in the butchery of meats, seafood, fish and poultry
   a. Meat grinder
   b. Band saw
5. Identify and select tools used for butchery
   a. Meat mallet

Figure A-1c. Tools and equipment station.



C. Product Identification

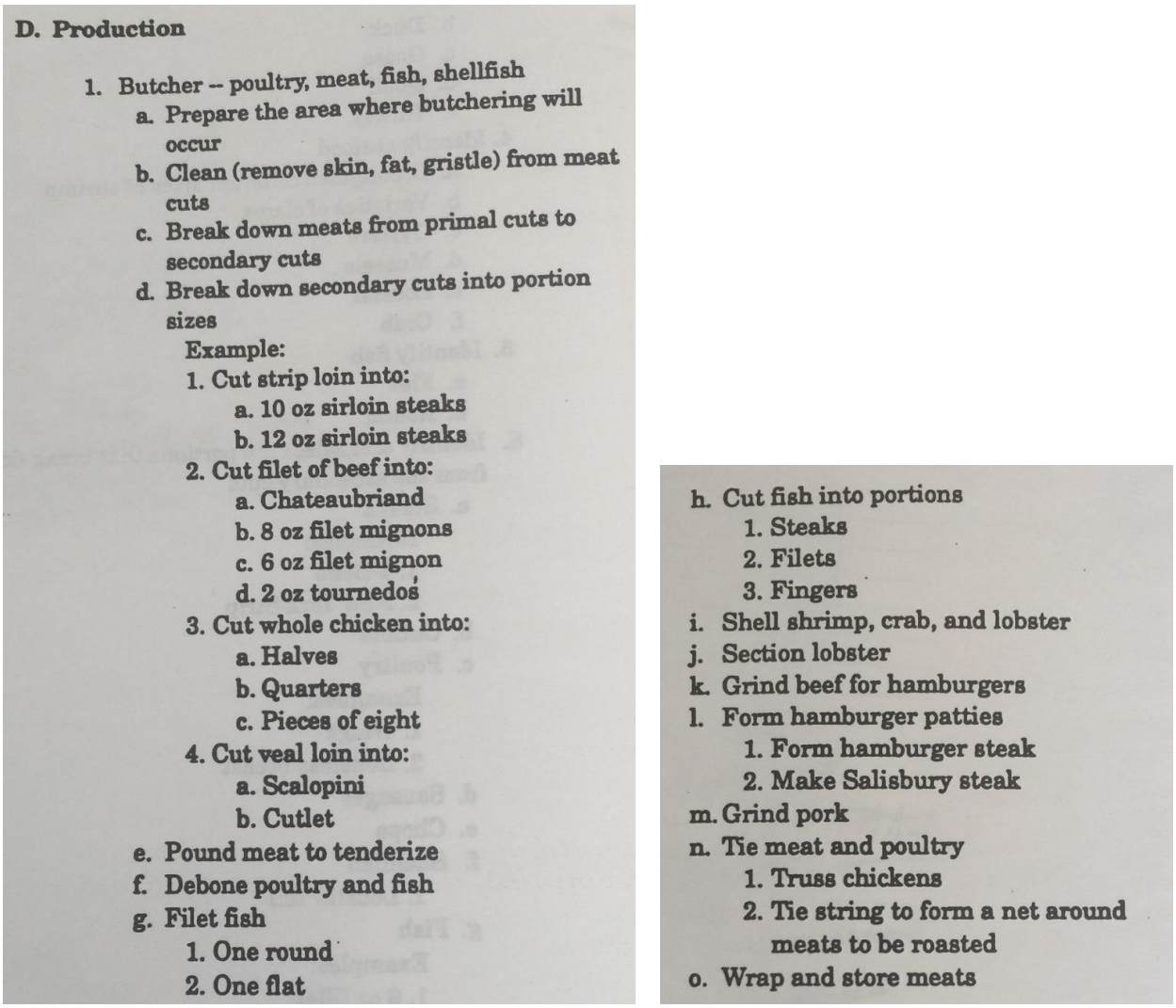
1. Identify and select the primary cuts of meat
2. Identify and select the secondary cuts of meat
3. Identify poultry
   a. Chicken
      1. Fryer
      2. Roasting hen
      3. Capon
      4. Broiler



b. Duck
c. Goose
d. Quail
e. Turkey

4. Identify seafood
   a. Distinguish different sizes of shrimp
   b. Varieties of clams
   c. Oysters
   d. Mussels
   e. Lobster
   f. Crab
5. Identify fish
   a. Flat
   b. Round
6. Identify and select the portions that break down from the secondary cuts
   a. Steaks
      Examples:
      1. T-Bone
      2. New York Strip
   b. Cutlets
   c. Poultry
      Examples:
      1. Wings
      2. Boneless breast
   d. Sausages
   e. Chops
   f. Shellfish
      1. Lobster tail
   g. Fish
      Examples:
      1. 6 oz fillet
      2. Fingers
      3. Steaks

Figure A-1d. Product identification station.



D. Production

1. Butcher -- poultry, meat, fish, shellfish
   - a. Prepare the area where butchering will occur
   - b. Clean (remove skin, fat, gristle) from meat cuts
   - c. Break down meats from primal cuts to secondary cuts
   - d. Break down secondary cuts into portion sizes

     Example:
     1. Cut strip loin into:
        - a. 10 oz sirloin steaks
        - b. 12 oz sirloin steaks
     2. Cut filet of beef into:
        - a. Chateaubriand
        - b. 8 oz filet mignons
        - c. 6 oz filet mignon
        - d. 2 oz tournedos
     3. Cut whole chicken into:
        - a. Halves
        - b. Quarters
        - c. Pieces of eight
     4. Cut veal loin into:
        - a. Scalopini
        - b. Cutlet
   - e. Pound meat to tenderize
   - f. Debone poultry and fish
   - g. Filet fish
     1. One round
     2. One flat
   - h. Cut fish into portions
     1. Steaks
     2. Filets
     3. Fingers
   - i. Shell shrimp, crab, and lobster
   - j. Section lobster
   - k. Grind beef for hamburgers
   - l. Form hamburger patties
     1. Form hamburger steak
     2. Make Salisbury steak
   - m. Grind pork
   - n. Tie meat and poultry
     1. Truss chickens
     2. Tie string to form a net around meats to be roasted
   - o. Wrap and store meats

Figure A-1e. Production station.

Expansion to more fields of study occurred in the 1960s through the Vocational Education Act of 1963. The largest alterations occurred in the 1980s with the Carl D. Perkins Vocational and Technical Education Act of 1984. This legislative focus shifted training priorities to an academic curriculum, alongside the vocational purposes. Reauthorization of Perkins in the 1980's (Perkins II) continued the drive towards the merging of academic and occupational competencies (Grubb, 1997; Rojewski, 2002) through a diffused system of state led evaluation of vocational programs of study. The "new allotment formula came with accompanying amendments that changed the

administrative authority over Perkins dollars by changing the structure of the state's CTE program evaluation system" (Manley, 2011, p. 120).

The impact of the updated Perkins legislation upon culinary arts training has been strong, but unexamined. Merging two distinct philosophical concepts is work that has never undertaken. Consequently two disparate goals exist within vocational education, creating outcomes that stray far from the original narrow focus of workplace skill development. Recent vocational educational scholarship urges a national discussion on the heuristics of vocational education from those within (Rojewski, 2002; Grubb, 1997). The purpose of this study was to listen to the voices of chef-educators working within a Perkins II environment that stressed both academic transfer and technical skill training.

The new emphasis in Perkins II legislation may be seen in the development of the AAS degree within the community college. While the curriculum for the AAS degree was adopted from the apprenticeship logbook, additional coursework was added to the degree to ensure compliance with state and regional accreditors. Academic transfer courses were those most easily accepted by university articulation evaluators, and in the case of culinary arts the courses most often articulated were hospitality and nutrition courses as these fields have terminal university degrees (Ph.D.) as well as extensive licensing regulations for the practice for sub-specialties (Registered Dietician, R.D.). In contrast, the chef has no mandate for formal education at all. Degrees for chef training can be certificate programs as well as associates degrees, but the practice of cookery does not depend on certification of any sort. Hospitality as well as Nutrition or Dietetics, are fields of study with terminal degrees (Ph.D.), research journals, professional

conferences, national certifications, and other forms of academic life. It is rare for Hospitality or Nutrition programs to require lab training in culinary arts, and even when these courses are offered, the philosophical differences between a chef and a nutritionist is large, as the chef has been trained in an applied technical program, whereas the nutritionists' training is based in studying the microbiology not application of food.

Nutrition training has little in common with culinary arts training, and much of the degrees at the highest level concern themselves with the management of obesity and food processing and preparation techniques (See Table 7). The chef, in opposition, is trained to see food as the reason for their professional existence, not a cause of a medical condition (obesity). As such, there is a field disconnect between the training of the nutritionist, and the chef.

Moving from a one-on-one mentoring experience to a lab environment with classroom sizes of eighteen or more, along with the implementation of group work for each competency in place of individual practice, ensured a decline in the technical skill set of outgoing students. The ACF did not oversee the consequences of an altered site of content delivery, and made few recommendations for assessment of students' technical skills, or ways to measure minimal competency. Instructors in associate's degree programs were often industry chefs, with limited exposure to philosophies of student learning and assessment.

Furthermore, while a chef-led organization was appropriate for the oversight of the apprenticeship program, it was less capable of running a higher educational program given the absence of formal education the leaders of this organization

Table A-1 *Comparison of Two Registered Dietician Nutritionist Baccalaureate Degrees*

Culinary Nutrition (Johnson & Wales/Private Culinary School)	**Nutrition/Dietetics (Texas A&M/Land Grant University)**
Introduction to Culinary Foundations	Scientific Principles in Human Nutrition
Culinary Fundamentals	Horizons in Nutrition and Food Science
Cooking in Today's Restaurant: Breakfast & Lunch	Scientific Principles of Foods
Cooking in Today's Restaurant: Dinner	Nutrition Through Life
Cooking in the Global Marketplace	Food Service Systems and Management
The Science of Cooking and Sensory Analysis	Nutrition Assessment and Planning
Purchasing, Product Identification and Protein Fabrication	Nutritional Treatment of Disease
Essentials of Dining Service	Community Nutrition
Foundations of Baking & Pastry	Nutrition and Physiological Chemistry
Exploring Beverages	Seminar
The Craft of Garde Manager	Anatomy & Physiology (2)
Contemporary Service and Restaurant Supervision	Biochemistry (2)
International Cuisine and Culinary Cultures	Chemistry (3)
Advanced Pastry	Biology (3)
Classical Cuisines of France and Italy	Electives (8)
Vegetarian Cuisine	University Core Curriculum (42 Units)
Designing Healthy Desserts	
Athletic Performance Cuisine	
Spa Cuisine	
Nutrition Assessment	
Life Span Nutrition	
Food Science	
Medical Nutrition Therapy and Advanced Medical Nutrition Therapy or Principles of Food Product Development and Product Design and Development	
Advanced Culinary Nutrition Internship	
Career Capstone	
Introduction to Organic Chemistry	
Biochemistry	
Technical Writing	
Food Safety and Sanitation Management	
Introduction to Menu Planning and Cost Controls	
Supervision for Food Service Professionals	
Food Service Financial Systems or Medical Food Service	
Introduction to Nutrition	
Anatomy and Physiology	
Food Microbiology and Food Microbiology Lab	
General Education Core	
Total Credits: 137	**Total Credits: 120**

traditionally held, as well as training methods decidedly lacking in modern pedagogical methods. Lacking awareness of the specific needs of the culinary classroom due to

their training as chefs, their attempt to replicate the apprenticeship program within a community college environment led to clear technical skill declines none of which were anticipated nor addressed.

Vocational education is characterized by the need for institutional regulation often via state controls. Curriculum is tightly bound to the desires of the employer who has outsourced their on-the-job training to an educational entity, but the training exists for the express purpose of skill acquisition. Skill acquisition is narrowly defined within this system, and verified by job placement after program completion, not mastery of specific classical skill sets. In place of on-the-job training, most associate's degree programs added cooperative education classes to their curriculum which are workplace hours intended to initiate a student into the field of culinary arts. Yet lacking definitional standards on which placements are beneficial to students, what competencies they are to master during their semester, and the characteristics of the actual site it is possible for a student to spend their semester at a fast-food chain, receiving the same credit as someone working under a certified master chef. Furthermore, degree programs that mandate co-op units as a requirement for graduation exclude career changing professionals for whom leaving their lucrative careers to work a minimum wage job for the necessary 300 hours in a semester is not possible. Proponents of the co-op cling tightly to the necessity of 'workplace' training, without any interest in discussing the parameters such training must define.

The American Culinary Federation (ACF) certifies programs, as well as individual chef levels of expertise, yet makes no distinction between a for-profit school, and a community college. An unpublished list of program qualifications further obfuscates

national norms and outcomes, with for-profit teams evaluating community college programs (Chef 39, 2012). While the U.S. Senate is specifically investigating proprietary schools in the field of culinary arts (Tom Harkin, 2012), because of the disproportionate number of students who default on their student loans with this particular major, the ACF continues to designate such proprietary schools as "exemplary" based on unpublished criteria of programmatic outcomes[6] ("ACF Accredited Postsecondary Programs" n.d.)

The community college relies on regional accreditation (SACS, for example) and a visiting team from a for-profit college may be unaware of the additional regional accreditation and general education requirements the community college program must provide. In addition, it is often the case that the culinary programs in a community college are managed by deans without a background in culinary arts, and this leads to fiscal pressures that cause chef instructors to feel under-valued within their academic department. Furthermore, state and regional accreditation has itself created the perception that culinary arts instructors must possess formal education at the Master's degree level. A shift away from the apprenticed trained instructor with strong technical knowledge and towards faculty possessing any master's level degree continued to minimize or diffuse technical skills.

The structure of the community college often houses the culinary program in an academic unit where the senior administrator overseeing the budget is not a chef, and

[6] Exemplary Programs symbolize the highest educational standards recognized by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC). The award is presented to programs that have proven full compliance with all ACFEFAC accreditation requirements in the last visiting team report along with excellent management of the program ("ACF Accredited Post-Secondary Programs", n.d.). The ACFEAF Accrediting Commission consists of 10 chefs, 4 of whom hold formal degrees.

has little practical knowledge of the kitchen, nor an intrinsic understanding of the need for regular individual practice to master specific technical skill. There is little individual practice allowed by department deans who are cognizant of the large expense food products may impose on their budgets. Lacking concrete data showing the need for individual practice, the cheapest course (little product, group work only) is often the chosen course.

With the popularization of the field of culinary arts in the media, the incoming student demographic profile has changed extensively in the last fifteen years. Most students possessed extensive experience in a kitchen before attending culinary school and had highly developed schema (Ericsson, Chase & Faloon, 1980) allowing for the rapid comprehension of daily lessons. The student of today has not only little to no kitchen experience, but often has no experience with home cookery either. Many of the students encountered are second and third generations away from any knowledge of scratch cookery, having often never eaten a meal cooked from scratch in their entire lives.

The implication of this demographic alteration necessitates an altered curriculum to provide for adequate schema development. K. Anders Ericsson's theory of the structure and acquisition of expert performance in any given domain (Ericsson, 1998; Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Charness, 1994; Ericsson & Lehmann, 1996; Krampe & Ericsson, 1996, Lehmann & Ericsson, 1998a) called 'Deliberate Practice' a promising avenue for identifying and achieving superior technical skills within the new culinary classroom.

It is important to distinguish deliberate practice from simply practice---the

accumulation of hours of practice on a given skill-- for Ericsson has consistently shown that the amount of time one practices a skill set has little relationship to the acquisition of expert status. According to McGaghie (2006) there are nine essential features of Deliberate Practice including clear well defined learning objectives and tasks, appropriate levels of difficulty, focused repetitive practice that leads to rigorous, precise educational measurements" (McGaghie 2006)

Instructions must be explicit "about the best method" (Ericsson, 1993, p. [367]) of tasks, and organized in a manner that allows for proper oversight, for the quality of the immediate feedback is a critical component. "A fundamental prerequisite for improvement of performance accuracy through practice is the availability of valid immediate feedback… In numerous other domains it has been possible to identify special practice activities (deliberate practice) that performers, teachers or the performers themselves design to provide opportunities to improve particular aspects of their performance in an environment that allows gradual refinement after problem solving and repeated variations with immediate feedback" (Ericsson, 2007, p. [1128]).

This theory of deliberate practice reveals a type of practice distinct from the mindless drills one may remember in music. "Deliberate practice is a highly structured activity, the explicit goal of which is to improve performance. Specific tasks are invented to overcome weaknesses, and performance is carefully monitored to provide cues for ways to improve it further. We claim that deliberate practice requires effort and is not inherently enjoyable" (Ericsson, Kampe, & Tesch-Romer, 1993, p. [368]). The implementation of deliberate practice (Ericsson, Smith, et al.) has consistently yielded significant improvement in a skill set, above and beyond what simple practice can yield.

Ericsson's work seeks to "define the critical differences between exceptional and ordinary performers" (Ericsson, Kampe, & Tesch-Romer, 1993, p. [363]). His work been widely utilized in the field of surgery whose adoption of this theory has yielded important work for the acquisition of medical expertise, and the measurement of the mastery of those skills. The research conducted in the field of medicine, music, and sports are a rich source of quantitative data of use in the culinary field, a field sorely lacking in the kinds of qualitative, but an approach necessary for the advancement of this field. Identification of an instructor's technical competency is underway in the fields of surgery, sport, chess, and general medicine. "Surgical education programs will be required to include methods to teach and assess each resident's technical competency. The apprentice model of 'see one, do one, teach one' remains the current standard for the technical training of subspecialty surgeons" (Gearhart, et. al., 2012, p. 521). Yet a number of additional elements must be present in order for the instructor to possess appropriately high levels of skills, and these include "(1) a high volume of cases with multiple opportunities for repetition, (2) skilled surgical mentors and teachers, and (3) long work hours" (Gearhart, et. al., 2012, p. 521). Most surgeons reported that there was no "formal assessment of procedural competency" (p. 522) just as there exists few tests to identify a culinary art's technical proficiency. Gearhart et.al recommends a baseline testing of all incoming students followed by specific curriculum for achieving the required level of technical proficiency. Other studies have demonstrated the use of a validated objective assessment simulation of technical skills as part of the hiring process. Other studies have identified valid and reliable methods to assess technical skills in the classroom, and may point the way for stronger performance within the

culinary classroom, if the required national discussions on the meaning of the associate degree include specific technical skill sets (Moorthy, et. al, 2003; Winckel, 1994; Reznick, 1993; Gearhart, 2012; Cox & Swanson, 2002). This presumes the ability of the field practitioners to enter into national discussions leading to formal knowledge systems including assessment for strengthening the degree itself. The associate's degree may not be the correct location for this type of abstract knowledge.

Research has focused on organizational transformation and boundary definition within the university context (Brint & Karabel, 1989; 1994; Fligstein & McAdam, 2011) with less exploration into the vocational movement housed within community college. What a professional *does* is different from a non-professional, according to Abbot, as that which is in use "since application is it's main purpose. But professions do in fact develop abstract, formal knowledge systems from their first origins" (Abbot, 1988). The nature of the abstract knowledge systems, and the ways in which these knowledge systems develop emerge from an organized profession able to effectively advocate for boundary creation. Professional organizations if powerful, are a "prerequisite of public or legal claims" and the start of the movement towards self-autonomy, or self-governance and are one of the largest distinctions between a professional and non-professional field. With the emergence of a new abstract knowledge base, connections may be created between fields never before aligned, revealing important patterns not seen before in the single bounded field. This academic knowledge in turn "legitimizes professional work by clarifying its foundations and tracing them to major cultural values" Abbot, 1988 54). Expertise status and its achievement as a theoretical concept was developed in the last century to help scholars situate the emerging concept of a

'professional'. Abbot's *The System of Professions; An Essay on the Division of Expert Labor* (1988) defines the characteristic ways in which a professional lays claim to the title of expert. "Only a knowledge system governed by abstractions can redefine its problems and tasks, defend them from interlopers, and seize new problems" (9). Jurisdiction is possible through the creation of abstract, formalized knowledge, the outcome of which produces autonomy or self-regulation, one of the key characteristics of a professional.

Abstract knowledge creation allows a professional to control their work task through the definition of the task itself. Generally speaking, national organizational power precedes the creation of this abstract knowledge base, and this organizational strength is often key in gaining boundary control. Through concentrated power, the standards for entry and training are codified and contained within the university space. This has helped to reconstitute the professions ever more exclusively on the basis of 'applied formal knowledge' or expertise (Brint, 1994).

Current theoretical approaches define the nature of an emergent professional field in terms of identifiable patterns (Abbot, 1988; Brint, 1994). Key indicators in a field transformation include: creation of a new 'expert' conceptual space (Abbott, 1988); autonomous self-regulation; internal markers of acceptance of this new idea (Colyvas & Powell, 2006); and finally the battle for power of this new form, and if successful, jurisdictional authority over field definition.

Abstraction enables survival in the competitive system of professions" (Abbot, 1988, p. [9]). Domain specific creation of abstract knowledge systems (Abbott, 1988; Brint & Karabel, 1989) reveals the possibility of discipline-specific transformations, the

outcome of which may be new power holders, as well as new problems. “Any occupation can obtain licensure (e.g., beauticians) or develop an ethics code (e.g., real estate), but only a knowledge system governed by abstractions can redefine its problems and tasks, defend them from interlopers, and seize new problems.

The very meaning of a chef has been in America. The training of a chef has been marginalized by design, and the practice of this field has been relegated to the strict performance of their duties. The outcome of such a system has been to render the chef a semi-professional, incapable of theorizing solutions to systemic problems inherent within the American food system.

The Culinary Institute of America (CIA) for example, began the process of offering the baccalaureate in the 1990’s, and re-conceptualized the associate’s degree as the contact point for the heavy technical skill training, with the final two years of the Four-year degree as the site of expanded academics (Chef 34, 2010; Chef 35, 2010; Chef 20, 2010, 2014). The third and fourth year of the bachelor’s degree are the time of specialization into applied food studies, culinary science, and culinary or baking and pastry management. Master’s degrees are being conceptualized at the time of this writing (Chef 4, 2015; Chef 20 2012). Finally, a number of specialized research agendas within the field are challenging the long held assumption that culinary arts are a strictly vocational field.

Additionally, Johnson & Wales offered their first bachelor’s degree in culinary arts in 1993 (“History of JWU”, n.d.). The Culinary Institute of America as well as Johnson & Wales maintains high validity within the culinary community, whereas those within the

industry have disdainfully called culinary school programs within community colleges "cafeteria cook schools" (Chef 4, 2015).

The professionalized chef in the process of emergence will be able to command knowledge in a way that the more narrowly focused semi-professional chef may not, for in the reformulation of field boundaries, the professional chef who is no longer bound to the community college's emphasis on workplace production, is emerging as a power broker through their newly acquired 'applied formal knowledge/expertise'. In the analysis of the data collected from this research project, it may be possible to see the field of culinary arts escaping the jacket of vocationalism.

The current divisions among chefs, nutritionists, food scientists, medicine, public health, and the business of the restaurant industry reveal an opportunity for new field intersections. Fligstein and McAdam (2011) define this as a challenge to the existing strategic action field (SAF) and its current organizational status. Emerging field intersections discussed in this piece will be successful if these new "challengers will orient themselves toward the reorganization of the social space by creating a new collective identity and bringing others along" (p.18). This new collective space will re-frame the existing boundaries, breaking some rules such as the semi-professional status of chefs, and will forge new collaborations within new colonized "social space" (p.19).

There now exists the perception that the ACF is irrelevant (Chef 39, 2012; Chef 38, 2014; Chef 37, 2015, et al). Indeed, within the 2011-2016 ACF Strategic Plan is their acknowledgement that the national organization has "alienated certain sectors of the industry in the past, which has resulted in the formation and development of other

organizations now in strong competition with the federation" (American Culinary Federation, 2014, p. #11). Such numbers may demonstrate that low levels of 'buy-in' exist. The ACF has never succeeded in requiring ACF certification as a prerequisite to working as a cook, or as a culinary professional.

Offering certification to 'approved' schools, the ACF has never published their criterion for approval outside of the logbook for apprentices. In addition, moving to the associate's degree model forced the ACF to submit to the state educational agencies overseeing community colleges, regional accrediting bodies, financial aid rules, and federal workforce rules as well. Oftentimes the ACF rules conflicted with the rules from the state agencies, and when that would occur the state held more power than this lobbyist group, again diminishing the authority of the ACF. Before they sought the degree program, they had little oversight to contend with and hence much more actual power.

A four-tiered certification program is currently offered by the Culinary Institute of America geared to working professional chefs. The first through third levels correspond to ACF levels of certification through the Executive Chef level, but by offering the four-day practical and written exam at their facility, maintaining rigor and assessment consistency is possible. Furthermore while technical skills and financial skills are evaluated in a rigorous manner, one is also tested on leadership skills at a progressively more difficult level. The design of this program was to define the essential skills and concepts necessary for the practice of culinary arts at a professional level. When I took my second Pro-Chef class in Hyde Park, New York, I was required to get special permission from the director of the continuing education program to override the class

number limitation; the entire class was filled with military personnel who were sent to gain certification by the military as this program has such a high level of validity. I found the content exacting, the teaching consistent, the competencies clear, and the practical exams rigorous but fair. While the CIA has claimed to hold no desire to turn this program into a national certification exam, it is clear that they are well positioned to do so, as they have fully defined the realm of the chef.

APPENDIX B

EXTENDED METHODOLOGY

In this chapter, I provide information on using apprenticeship-based ethnography as the methodological entry into the culinary arts field. This apprenticeship provided a richer inquiry through which it was possible to comprehend chef instructors' experiences of the associate's degree model of culinary arts instruction, particularly for those trained in the apprenticeship model, now nearly discontinued. I describe apprenticed auto ethnography and explain why it was chosen for this research question. I then describe the conditions of situatedness, the identification of participants for this study, the collection of data, the analysis of this data, triangulation of the data, and how a program analysis of certified culinary programs contributed to research trustworthiness.

Research Problem

The following question guided this inquiry: What do chef instructors believe about the associate's degree model of chef training?

Apprenticeship based Ethnography

Apprenticeship based ethnography is an active method of fieldwork that 'refigures the social relationships often thought to typify ethnographic research: ethnographic observer and 'naiveté' object of observation' (Downey, 2015, p. 184). Apprenticeship based ethnography as a method holds a dual purpose: to learn about the subject and to learn about how one *learns* the subject (Downey, 2015). Enculturation through apprenticeship includes "a more intimate knowledge of the paths that lead to mastery" (Downey, 2015, p. 184).

Interest in apprenticeship as a situated fieldwork within anthropology was introduced as a means to describe informal learning (Coy, 1989; Greenfield & Lave, 1982; Singleton, 1998; Lancey 1996). The concept of apprenticeship as a method and means towards membership within a closed group continued to be developed (Wacquant, 2004; Downey, 2015) by Wacquant who asks "what social ingredients enter into its manufacture; through what pedagogical techniques is it transmitted and validated; and what can its social genesis, inculcation, and unfolding 'teach us about the logic of any practice' (Wacquant, 2005 p. 442). Wacquant proposes the concept of habitus as a means to understand his apprenticeship into a specific boxing community. Habitus to Wacquant included joining the community as a beginner, rather than as a researcher. This allowed Wacquant to learn the ways in which skill acquisition occurs, and to identify the layers of cultural situatedness within which closed groups identify. Wacquant's work is significant towards the formulation of my identity as a researcher attempting to join a closed and complex community as his *Body & Soul* is concerned with "elucidating the social fabrication of a particular *habitus,* the set of cognitive, emotive, and conative schemata that define the proficient participant in the pugilistic microcosm" (Wacquant, 2005 p. 442).

The publication of *Body & Soul* resulted in a large amount of discussion and criticism concerning this ethnographic method, culminating with an entire issue of Qualitative Sociology devoted to discussion of his work. Concerns with ethnography too focused on the self or individual cases (Coy, 1989; Singleton, 1998; Geurts, 2005; Hoffman & Fine, 2005; Dunning, 2005) have been addressed over time particularly with the research advanced by Lancey (2012), Downey (2015), and Woodward (2008) who

broaden apprenticeship fieldwork “making ethnographers ‘observing participants’ more than ‘participant observers’ (Woodward, 2008).

Transitioning to student: becoming an apprentice

Apprenticeship is a method of skill acquisition as well as an enculturation process whereby the student acquires the systemic values of the guild they are attempting to join (Wolek, 1999). Within field research, the researcher apprentices into the community under observation as a practicing member through active participation (Downey, 2015). Such apprenticeship “inserts the ethnographer into a social position where being inept is appropriate, as is striving for greater understanding” (Downey, 2015, p. 191). Ineptitude allows the masters to provide instruction into behaviors and norms, as well as direct instruction in skills.

For the purposes of this study, I used my informal apprenticeship as social inclusion (Downey, 2015) into the community of study first situating myself within the community as a beginner, then transitioning into a more meaningful position (Downey, 2015) as my technical skills and abilities increased. Downey further proposes that one’s choice of group to study must be strategic and practical rather than easy, and that the “researcher must be willing to endure hardship or curtailed freedom in order to get close to a particular teaching tradition (187). Lave & Wenger (1991) speak of ‘legitimate peripheral participation’ of movement from marginality to acceptance. Working in a variety of kitchens in different states, attending culinary school, accepting a position as an administrator of an apprenticeship program that required immersion into the culture helped me recognize that were I to apprentice fully, I would need to leave the administrative position and take a faculty job as a culinary arts teacher. I found a chef

trained in discontinued methods under which I wished to learn. While a chef-instructor, I was also serving an informal apprenticeship into the comprehension of the methods of culinary arts instruction, as well as learning his classical techniques throughout my many years as a teacher.

In the process of a cognitive apprenticeship in culinary arts, this researcher (Lave & Wenger, 1991) joined the culinary arts field through culinary school and kitchen work, learning the harsh rules along the way. Eventually I became accepted as a legitimate insider even though my work as a researcher caused some concern as to my final loyalties. The advantages of enculturation allowed for penetration of a field with little prior academic attention. The cognitive apprenticeship began with attending culinary school, working in many different kitchens, and touring culinary schools in the area in order to understand the shape of culinary arts training. This introductory work was followed by then becoming an administrator of an apprenticeship culinary program, followed by ushering this apprenticeship school into an associate's degree culinary training model, including the purchase of this school by a local technical college. In the process of writing new associate's degree programs and certificates in both baking & pastry and culinary arts approved by the state, the initial investigation into the national shape of these degree programs began. Finally, the specific and lived understanding of each program's advantage and disadvantage were invaluable for the formulation of questions to ask during the oral interviews.

The final step in this enculturation process involved taking a position as a chef-instructor in one of the oldest and largest associate's degree programs in order to finalize my culinary training under the expert guidance of a chef whose apprenticeship

training no longer existed. His friendship, guidance, stories, continual expert training, and culinary contacts allowed me to have access to the best culinary masters as recognized by their peers. When introduced by this chef who functioned as a gatekeeper, I gained immediate access to a closed and fairly secretive guild-like field, once I had established my credentials as an insider. Living within the world I was studying allowed for a deeper understanding of the history, methods, and challenges facing culinary arts education, as well as an amazing exposure to the finest skills, the finest minds, and the finest foods available. "Apprenticeship settings are ideal contexts in which to gain entry into a community and provide a meaningful position for the researcher and research agenda, something that many ethnographic projects struggle to find"(Downey, et. al. 2015, P. 186). Instead of communicating *about* culinary arts, the researcher was able to describe and discuss the culinary arts as an insider apprenticed into the community, and to access concerns not visible to outsiders.

The following list provides a detailed progression of the researcher's entry into the field of culinary arts beginning with attendance at a culinary school in Chicago, through formal entrance into the community of practice as a culinary arts apprenticeship administrator, followed by an extended period of time as a culinary arts instructor within an associate's degree program.

Culinary School Tours

- Culinary and Hospitality Institute of Chicago, 2000 (attended)
- Kendall College, Evanston, 2000
- College of DuPage, Glen Ellyn, IL 2001
- Elgin Community College, Elgin Il, 2001
- Arkansas Culinary School, Little Rock, AR 2005 (hired)
- Pulaski Technical College (created the merger between two schools; wrote AAS in culinary arts approved by coordinating board)
- Northwest Arkansas Community College, 2006
- Johnson & Wales, North Miami 2007

- El Centro College, Dallas TX (hired 2007)
- Collin College, Plano TX 2009
- The Art Institute, Dallas TX 2009
- Le Cordon Blue, Dallas TX 2009
- Tarrant County College, Arlington, TX 2009
- University of North Texas, 2009 (hospitality program)
- Culinary Institute of America, Hyde Park NY 2010, 2012
- Kendall College, Chicago (relocated) IL, 2010
- North Texas State Community College, Waco TX 2011
- Santa Barbara Community College, Santa Barbara, CA 2012
- Utah State Community College, Salt Lake City, UT 2015

Administrative Work

- Executive Director of Apprenticeship program,
- Correct apprenticeship licensure
- Request to obtain the AAS degree
- Research and writing of a variety of AAS degrees in culinary arts and baking & pastry
- Research to identify local technical school interested in purchasing the apprenticeship program
- Programs approved by the state, apprenticeship school dissolved then purchased by technical college
- Hired as a chef-instructor with oldest and largest culinary associate's degree program
- Began Ph.D. program

Conferences

- ACF State Convention, Little Rock AR 2007
- Texas A&M Assessment Conference, College Station, TX 2010; 2011
- Texas Association of Institutional Research, Austin TX 2010
- ACF National Convention Grapevine, TX 2012
- CIA/Harvard School of Public Health: Menus of Change Leadership Summit 6-2014
- Center for the Advancement of Foodservice Education June 18-20 2014
- James Beard Foundation Food Conference 10-2014: Health & Food: Is better food the prescription for a healthier America?

Presenter

- Center for the Advancement of Foodservice Education 2014: The quantification of technical skills, Salt Lake City, UT
- Texas A&M Assessment Conference 2011: Qualitative Analysis of Curriculum Maps and Broad-based input as a Basis for QEP Topic Selection, College Station, TX
- Laljiani, K.C., Shaskan-Cossio, A., and Yeats, D.J., "QEP Topic Selection: Use of Grounded Theory to Analyze Qualitative Responses", Contributed paper

presented to the Texas Association for Institutional Research, February, 2011 (Nominated for Best Presentation).Shaskan-Cossio, A., Porter, J., and Laljiani, K.C., "Using Action Learning for Assessment Leadership", 2nd Annual HOLA Summer Assessment Institute, August, 2010.

- "Using Rubrics as an Analytic Tool to Improve Student Outcomes in a Culinary Classroom". 10th Annual Assessment Conference, Texas A&M. 2010

Publications

- Shaskan, Allison (previous name). "How I Changed My Mind or a Bi-dialectalist Changes Her Position." The Elephant in the Classroom: Race and Writing. Ed. Jane Bowman Smith. Hampton Press, 2011. Pages. Print
- Shaskan, Allison. "This Hollandaise scores a '3'". Chef Educator Today. 2010 Print
- Shaskan, Allison. "The Pedagogy of Equipment." Chef Educator Today. 2010 Print

Shaskan, Allison. "18 Students with Sharp Knives." Chef Educator Today. 2009 Print

Participation in creation of Articulation Agreements

- El Centro College/University of North Texas
- El Centro College University of Houston
- El Centro College/Texas Tech

Ongoing Training

- Pro Chef I Summer 2009
- Pro Chef Certification Program Level I Summer 2014

Participants

The initial participants were my co-workers as many had been trained in formal culinary apprenticeship programs. Extensive and ongoing interviews both of a formal and informal nature continued with many of my peers throughout the years of my research, even when these peers left to take positions elsewhere. The next level of participants was selected through chain referral sampling (Biernacky & Waldorf, 1981; Kalton, 1993; Penrod, 2003). Contacts were obtained through my peer-mentor who possessed extensive contacts nationwide with the culinary arts community through his years of high level culinary work in a variety of states. Naturally suspicious, As a

gatekeeper, I wasn't allowed access to his list of contacts until he was certain of my intentions for this research as well as my content mastery, as I would essentially represent him when I interviewed these chefs for maintaining one's professional integrity is a key piece of culinary arts professionalism.

The interviews took place over a 5-year period, and involved interviews with chefs in seven different states. Formal unstructured interviews were conducted with 17 chef-instructors, 4 pastry-instructors, 9 administrators, and 10 individuals involved in food systems work. I contacted the participants through phone calls and emails, offering a brief introduction to the nature of my work, my connection to the mentor-chef who provided me with the introduction, and the grand tour questions I planned to ask. All participants who were asked agreed to be interviewed. Most interviews were conducted in person, although phone calls were also utilized.

The following is a list of the oral interviews conducted by the researcher beginning in 2010, and concluding in 2015. The 2010 interviews began with faculty colleagues who related the story of their program one of the largest in the nation, soliciting their views on the program, and their concerns for the field nationwide. These interviews yielded key names of leaders in culinary arts education. Perkins funding was utilized to send the researcher to the Culinary Institute of America for skills development. This time was utilized to interview executive level leaders, as well as participate in the ProChef Level III class. The 2011 interviews concentrated on the state in which the researcher resided, getting more stories concerning state-level ACF chapter organization. Apprentice graduates were also interviewed to gain their

perspective on the loss of that program. A series of food system practitioners concluded the year.

The researcher returned to the Culinary Institute of America in 2012, interviewing three CMC's, and the director of culinary assessment, gaining deeper and broader knowledge of the curriculum alteration undertaken by the CIA in order to better meet the needs of the altered culinary school student, restaurant industry, and outside accreditation demands. An interview with a representative from the Texas Workforce Commission provided a strong understanding of the great distinction between a vocationally oriented program, and a baccalaureate oriented program.

2013 interviewed a culinary program at an Aspen Prize Winning community college. This school exemplified the workhorse nature of community college programs. A set of interviews with K. Anders Ericsson, Ph.D., and helped shape the researcher's understanding of the development and assessment of technical skills, as Dr. Ericsson has published extensively on this topic. In 2014, 1 conference in Boston called Menus of Change, sponsored by a joint collaboration between the Culinary Institute of America and Harvard School of Public Health exposed the researcher to a variety of individuals engaged in food systems, and a first-hand look at the broadening of the field, including future avenues for research investigation. An invitation only conference in New York City called the James Beard Foundation awards continued to investigate the researcher's contention that the field of culinary arts was broadening, creating new relationships where none previously existed. Dr. Harlan's curriculum training medical residents in culinary arts was presented as a way to combine the diabetes and obesity problems with a focused solution, using the chef as the vehicle to potentially alter the

poor public health outcomes. A chef-educator's conference in Utah yielded program administrators who were wrestling with the questions this research raised and concluded the year's interview set.

Finally interviews in 2015 were chosen to identify significant characteristics of advanced skill set habits and included apprenticeship students, a coach whose work as an outlier in the running community exemplified the work of K. Anders Ericsson, and whose discussion on the unique creation of a community where technical skills can develop and deepen, finalized the researcher's belief that focused research on culinary arts pedagogy would lead to a stronger student outcome, and potentially more satisfied chef-educators. An interview with the director of the first culinary nutrition program with the chef at the center, yielded rich ideas on the measurement of specific culinary arts outcome data, and continued to demonstrate the myriad ways in which the reformulation of a chef is leading to rich and interesting new programs.

Table B-1. *Short Description of Interviewees*

Profession	Significance	Which Model for Employment
Retired Restaurant Owner/Entrepreneur Front-of-the-House	Creator of Associate's Degree Program in Urban City in the south Still highly involved and influential in this program	Associate's Degree Model
Pastry Chef/Currently teaching at Urban City program in the South	Apprenticeship Training in Scotland Mastery level of technical skills	Associate's Degree Model
Retired Chef Instructor, Urban City program in the South	Long-time observation of student demographic change One of the first female graduates of the Culinary Institute of America	Associate's Degree program
Chef Instructor, Southern Metroplex	Example of new demographic of student who can learn culinary skills quickly with a new method	Associate's Degree Model
Pastry Chef, Business Owner	Example of new instructor model with positive approach to teaching	Associate's Degree Model
Executive Chef, Lead Chef Instructor, Urban City program in the South	Mentor, Gateway Chef, Last generation of chefs to be trained in a formal hotel apprenticeship program	Associate's Degree Model
President of Lead Culinary College in Northeast, Certified Master Chef, Ed.D.	Leadership of lead culinary school during transformative period	Baccalaureate Degree Model

Vice President of Lead Culinary College in Northeast, Certified Master Chef	Worked with gateway chef in the Urban Setting, was a key introduction	Baccalaureate Degree Model
Dean of Student Affairs at Lead Culinary College in the Northeast	Oversaw shift from Associate's Degree Model to Baccalaureate Degree Model in the 1990's	Baccalaureate Degree Model
Lead Culinary Instructor, Certified Executive Chef, Lead Culinary College in Upper Midwest	Model Program	Baccalaureate Degree Model
Female Culinary Instructor at Lead Culinary College in Upper Midwest, Certified Executive Chef	National Teaching Chef Instructor of the Year	Baccalaureate Degree Model
Retired Certified Master Chef of leading Urban Country Club, Past President of Texas Chefs Association	Prolific knowledge of field, connections and introductions to other Master Chefs	Associate's Degree Model, teaching part-time Trained through European Apprenticeship model
Program Director University Culinary Program in the South, Certified Executive Chef, Past President of Texas Chefs Association	Familiar with both models, working in new baccalaureate degree model	Baccalaureate Degree Model
Owner of Pastry Company in an urban Southern Metroplex	Graduate of apprenticeship program	Apprenticeship Model
Chef and Pastry Instructor at Urban city program in the South	Graduate of apprenticeship program	Associate's Degree Model
Fourth generation wine maker, owner of winery	Graduate of apprenticeship program, example of technical skill proficiency and value of apprenticeship program success	Associate's Degree Model
Owner of New Urbanism farm/restaurant/weekend destination	Trained with Alice Waters, proponent of Food Systems approach to culinary arts	Informal Apprenticeship Model
Ph.D. in Chemistry, Certified Master Brewer at major doctoral university	Example of Food System training at the Ph.D. level	Doctoral Degree Model
Director of major doctoral university chemistry program, Certified Master Brewer	Example of Food Systems training at the Ph.D. level	Doctoral Degree Model
President of Smart Chefs, LLC, past president of ACF, Inducted into American Academy of Chefs Culinary Hall of Fame, Certified Master Chef, Retired Chef Instructor, Culinary Competition winner	Leading voice for technical standards within the field	Retired Associate's Degree Model
Provost of Lead Culinary College in Northeast, Certified Master Chef	Proponent of higher level degree program, created food research program, national leader of core culinary standards	Baccalaureate Degree Model
Senior Director of Continuing Education, Lead Culinary College in Northeast, Certified Master Chef	Vision of Continuing Education arm that is a key moneymaker for the college Oversaw differentiation between professional and hobbyist	Baccalaureate Degree Model
Director of Culinary Assessment, Lead Culinary College in Northeast, Certified Culinary Educator	Trained in apprenticeship model, created skills remediation lab and responsible for consistent technical skill evaluation model	Baccalaureate Degree Model
Director of Southern State Workforce Education	Oversees culinary arts within the vocational paradigm	Associate's Degree Model
Director of Lead Community College Program, Southern California, Certified Executive Chef	Director of workhorse training program at Aspen Prize winning community college	Associate's Degree Model
Ph.D. Creator and researcher of Deliberate Practice/ 40 years of published data	Instrumental in quantifying the acquisition of technical skills	Doctoral degree Model
Director of Apprenticeship Culinary Education, Inter-Mountain Region, Chair of National Apprenticeship Committee	Proponent of modern Apprenticeship program	Apprenticeship Model
Chef Instructor, Culinary Institute Southern Florida, Certified Executive Chef	Proponent of national technical standards	Associate's Degree Model
Ph.D. Food Systems Involvement	Proponent of new food system, World Bank	Doctoral Degree Model
Medical Doctor, past chef, creation of Center for Culinary Medicine at university in the South	Proponent of teaching medical residents cooking skills	Terminal Degree Model (M.D.)

Ph.D. Food and Nutrition, Assistant Professor at State University in the Northeast	Proponent of new model combining nutrition with culinary arts	Doctoral Degree Model
Ph.D. Associate Professor, School of Nutrition and Policy	Leading proponent of new model including food policy	Doctoral Degree Model
Working Chef at leading internet video-service company in Palo Alto/Previous broker on Wall Street, career changer, apprenticed in New York City	Example of how companies are incorporating nutrition into their work-day for higher level output by their employees	Informal Apprenticeship Model
Working Chef lead restaurant in the Metroplex	Involvement with area high-school culinary training programs	Informal Apprenticeship Model
Ph.D. Agricultural Economist, Union of concerned Scientists	Focus on Food, Nutrition, and Economic Policy	Doctoral Degree Model
One of the first graduates of the Associate's Degree Model at leading culinary school in the Northeast/classmate of Dean Fearing	Teaching in a secondary model, exemplary technical skills	High School Model
National Coach of the Year, 2015	Proponent of nutrition for physical excellence	Doctoral Degree Model
Mentor and Competition Judge, Urban setting in the South	Skills USA, Secondary level culinary arts training	High School Model
Department Chari and Program Director, Culinary Nutrition, first degree program, R.D.	Curriculum attached, first approved R.D. program to incorporate culinary arts training first	Master's Degree Model
Master Butcher, Sponsor for butchery apprenticeship at National Organic Grocery Store Chain	Working in new model of apprenticeship to train butchers, judge of national butchery competitions	Apprenticeship Degree Model On-The-Job Training

Data Collection

Each participant was provided a list of 'grand tour questions' as well as an introductory paragraph into the nature of my research and my qualifications. I suggested a minimum time period of 60 minutes for the interview duration although in most cases the interviews lasted for 120 minutes or longer. The questions posed were open ended in nature beginning with the specific culinary training the interviewee had experienced. In every case this question was sufficient for extended discussions and memories of their own apprenticeship training, and in every case this training was remembered fondly, even when an interviewee had not been able to complete the full apprenticeship training. The participants were asked if their words could be captured through the researcher typing their responses as they spoke, one of the advantages of typing at an advanced speed. Participants were offered the transcript at the conclusion of the interview, and if so desired this was emailed to the participant for edits and review. Few made edits, and all who responded agreed that everything they spoke of

during the course of the interview was accurately represented in the transcript. If there were comments, they generally provided details that the participant had forgotten during the course of the interview itself.

Rapport was established through the gatekeeping chef, and often before the first question was asked, the chef inquired about the well-being of the chef and wanted to hear career updates on his successes within the community. As credentials had been established before the interview itself, resistance did not occur during the oral interviews with the exception of caution on the part of every chef who paused when discussing the role of the American Culinary Federation. Many of the interviewees provided a second extensive oral interview, as they felt that they didn't have sufficient time to talk about culinary arts training during the first interview. In a few cases, a third oral interview was conducted.

Data Analysis

All of the interview transcripts were uploaded and saved in 'Dedoose' a qualitative analysis software chosen as it "provides a range of mixed methods tools for the handling of text…allows coding, retrievals…and a wide range of charts (that) enable quantitative visualization of findings" (Silver & Lewins, 2015). Each interview transcript was read multiple times within the online software, as well as in print. Relevant sentences were coded using a color-coding tool within Dedoose. The inductive method of data analysis (Braun & Clarke 2006) began with identifying the initial codes, followed by the identification of mother codes based upon frequency counts. When each mother code emerged based upon the number of times it was referenced by the interviewees, a grouping of similar ideas that were related to the mother code were placed under the

umbrella of the mother code. This relationship mapping allowed for the strength of the themes to be visualized in a visual display called a 'packed code count' (Figure 1), an interactive display of code application frequency.

Lincoln (1995) proposes essential qualities of trustworthiness research within the qualitative context. The inductive method of data analysis (Braun & Clarke 2006) began with identifying the initial codes, followed by the identification of mother codes based upon frequency counts. When each mother code emerged based upon the number of times it was referenced by the interviewees, a grouping of similar ideas that were related to the mother code were placed under the umbrella of the mother code. This relationship mapping allowed for the strength of the themes to be visualized in a visual display called a 'packed code count' (Figure 2, page 16), an interactive display of code application frequency.

Once relationship mapping occurred, all of the sub-codes were 'dropped' under the mother code. The entire set of mother codes and sub-codes were then exported into a word document containing the excerpt, the name of the code or sub-code, the demographic information on the interviewee, the training methods of that chef, as well as gender.

The next stage of analysis included sharing the print interviews with peer chef-instructors who were asked to identify themes from 6 key interviews. Three separate chef-instructors, former colleagues, read and coded the same 6 interview; these peers also identified the themes identified by the researcher. From this analysis, four primary themes were named (Table 4, page 17-18) as mother codes by frequency.

Barusch (2011) describes triangulation as "a strategy to establish credibility…may involve multiple data, methods, analysts, or theories…the purpose of triangulation is to deepen understanding by collecting a variety of data on the same topic or problem with the aim of combining multiple views or perspectives and producing a stronger account" (p. 13). As the two largest themes emerging from the data included the strength of the apprenticeship program, and the concern for declining technical skill sets, a program analysis of all the 147 certified AAS culinary programs from the website of the American Culinary Federation was conducted, a method using the inductive method of data analysis.

The researcher downloaded each associate's degree program course requirements, separating the coursework into four broad categories: culinary lab courses; front-of-the house courses; general education courses; externship/co-Op/work experience courses. Using the data visualization software Tableau, a bar chart was generated showing the relationship between front-of-the house coursework and general education coursework, in comparison to culinary lab coursework. The result of this analysis lends credence to the concerns expressed in the oral interviews. The results show that 92% of the certified AAS culinary programs have more front-of-the house and general education content than culinary arts content in the culinary degree. Such triangulation lends credence to the concerns repeatedly expressed by all chefs on the loss of programmatic control, loss of content, and loss of time spent teaching necessary technical skills.

This research addresses a gap in culinary arts program analysis and reveals an abiding concern in program structure, content, and delivery that may advance the discussion within the culinary arts field. (See Figure 4.)

APPENDIX C

COMPLETE FINDINGS

Table C-1 provides examples of each Mother Theme and Sub-Theme.

Table C-1. *Themes and Subthemes with Supporting Quotes*

Theme and Subtheme	***Supporting Quotes***
Apprenticeship	Look at the people who went through the apprenticeship program: most own their own restaurant, and they have a different approach versus somebody who went to school "the book says I am supposed to do this".
Stories of Apprenticeship	In the kitchen is the hierarchy: I beat you into submission. The apprenticeship model provides a discipline that the students learn, a sense of awareness of the importance of the craft, as well as an intense focus for the craft. The world known by the apprentice has changed dramatically and the current educational training model is largely unsatisfactory to most chefs. Unfortunately for the industry, the apprenticeship program has been disassembled. No question that it afforded more opportunity to reinforce skill development and practice and decent work ethics and technical knife and culinary skills. Apprenticeship represented a way of life: done every day, five days a week, constantly. Our Associate's degree program…is still very much modeled after the history of our profession---the master to apprentice model. I was taught by my master to replicate what he did, the same knowledge was passed onto the next generation, and that served our profession well, but we are at a point where that model is not good enough. We need to maintain that discipline of the technical skill itself, the motor skills, but the part we need to introduce to our profession is the science. When the apprenticeship manual was made, we had half of a cow in the kitchen and one whole cow for the apprentice. It came in a truck and it took five of us to take it off the truck. Everything now is pre-fabricated in a box.
Technical Skill Sets	How did you pick up those technical skills in fine dining restaurants? Training! The chef I worked with, a crazy French guy---I would say: I don't know how to do that, and he would say to get everything together, we would

	make it together and then we would repeat it, and repeat it again.
	The reality is that if you don't have the basic cooking skills, molecular gastronomy is useless
	Hands on, not only meat cutting, but how you sharpen a knife, how you steel a knife
	Certain things we do in the culinary industry like motor skill, muscle memory, you can't learn it by reading the book, just like you can't learn the violin by reading a book.
	(Students today) don't know how to hang a game bird or hang a piece of meat or break down a carcass; they don't know if the carcass is infected, you don't touch that animal.
	Leave the claws on the chicken. They look at me with their mouths open!
	I used the (culinary) competition as a way to hone my skills and efficiencies and timing and discipline. Working under time constraints and a certain set of rules….
	At our freshman level, we still teach our student body stocks, soups, sauces, but the question is that if the student is at the foundation level, he or she has to understand what it takes to develop the gold standard in sauce making.
	Because we are competency based, if you miss a class day, you are required to attend a remediation lab so that you get the exposure to that skill.
	We have been meticulous about maintaining the skills along the way.
	A fundamental skill a chef must possess is how to make stock….stock making is the fond (foundation) of our profession, but an example of how we have a long way to go.
	10,000-hour theory is that it takes 10,000 hours to master something. This theory applies to our profession.
Accreditation	The accrediting commission needs to put their food down---no I won't accredit you….no slipping of the 6,000 hours per year.
Credentials/Assessment	It is macabre, but a chef can actually kill more people at one time….We don't have to be licensed. To open a restaurant, all you need is money and you can hire one person with a sanitation licence when food is being distributed, and if that person is not really watching the food or watching what is going on, it is so easy for something (bad) to go on.

	The NRA (National Restaurant Association) won't do it, so it's basically us in education and in this profession to do it. The word has to get out to the dining public that certified chefs are the ones who have this training---somebody licensed who is preparing their food. Needs to probably be a better system of evaluating someone's skill set…we have a long way to go. Case in point: we have to rethink what is to be the knowledge of our profession. We're left with a certification program that benchmarks work experience. We need data---for example, an excel spreadsheet which says how many number of testers, number of passers, number of re-takes, and identify area of weaknesses: weak soup, another weak soup, weak main course, weak timing skills…Identify in numbers. We had to change the way we do assessment---we had chefs who were making up their own tests, and making grades independently, so you're a is my D, is your B. Often the questions that we gave the students, the answers might be different just because the structure of the question was poorly written. I don't know how to change the system, because you'd have to deal with WECM (Texas Workforce Commission) and ACF, and then have to get our …Dean to agree, and we'd have to bring in the nutritionist (hostile to our field) and the wacky other faculty member who thinks she's a chef, and you'd have to get them all agree to work together and decide what to do with the kinds of students we have here.
Four-Year Degree Program/Standardization	The master to apprentice model---I was taught by my master to replicate what he did…the same knowledge passed onto the next generation. This served our profession well, but we are at a point where that model is not good enough. There is unprecedented interest in food and innovation and we wanted to develop something to address that Shouldn't we be positive we have exposed our students to the appropriate curriculum to gauge their advancement and placement? The problem is our chefs our very insular, not by desire but by design. We have to have a structure in place where the profession is represented as a profession

The part we need to introduce is the science into our profession.
At the baccalaureate level, there is deeper learning about the philosophical aspects of the craft and the profession.
Higher standards to get in, and higher standards to stay in.
We had to change the way we do assessment.
There was a lot of critical forecasting or research, so when I looked at this whole thing (Culinary Curriculum), I asked: what are the frustrations I'm hearing? From the students as they progress through they are being taught one way here, another way here, so our students were being shown 6 different ways of doing something, when they are really only ready for 1. In Bloom's taxonomy, they need stability and consistency to help them grasp the principles.
We put the program together to allow for the expansion of knowledge
Our students, beginning in their junior year, are involved with coursework in ethics, information technology, organizational behavior, economics and finance, etc. When we merge the technical learnings with the higher level of thinking, the educational process becomes more valuable to the student.
The apprenticeship model provides a discipline that the students learn, a sense of awareness of the importance of the craft, as well as an intense focus for the craft, but to resist the change for future growth and development is almost silly. The industry has changed, and we have to find a better way to communicate with that generation of chefs. We have to make clear that this is where we are going to move forward, and if we don't, we will lag behind as an industry.
An individual who comes (to this school) instead of following a more traditional apprenticeship model will become a much more focused and well-rounded culinarian in the fundamentals of good cooking. There are a core group of education courses as well as liberal arts courses intended to enhance the education for the students as well. This change has come as the marketplace has changed, so industry has demanded these higher-level skills. We need to offer students business management, writing, math, and so forth---again these higher levels of skills are demanded by the industry.

	The reality is that any knowledge expands over time. It was enough in the 1960's for me to have a primary education and a technical vocational education coupled with a culinary apprenticeship. Yet today, that learning model isn't enough for students to be successful in industry. Name the 5 mother sauces. If you have to pick only 4, which would you drop and why? These are the critical thinking skills above and beyond the regurgitation of data.
Changed Restaurant Landscape	If you look at the restaurant industry in 1978, it is unbelievable! In 1978, it wasn't that cool to be a chef and today you tell folks: I'm a chef and they say---wow that's cool! Now we see an emphasis on healthy kitchens, healthy lives, collaborations, research, health imperatives, increasing the use of vegetable and produce on your menu. Education is the best thing you can do---to equip people with the knowledge so they know it's about their own personal health! The core reality is that if you looked at a class of product knowledge 30 years ago, if you think about the products on the table from the mushrooms 30 years ago in the 1970's, you would see: large; medium or small, and today we are talking about 14-15 different varieties on the table! Today you see consolidated processing houses, everything is more broken down into sub primals or case ready, trimmed more. The way I see it is that our industry is dividing---we have our few fine dining and casual dining and convenience stuff, and what do all of the culinary programs have in common? They all teach to the fine dining. Is that the problem? The world known to the apprentice has changed dramatically, and the current educational training model is largely unsatisfactory to most chefs. The restaurant industry has changed dramatically in the last 45 years, with the heavy reliance on pre-prepared food and the loss of traditional preparatory techniques such as in-house butchery, and along with this loss came the loss of apprenticeship sites, and even in-house apprenticeship training. We must also look at what the food service industry is all about, and what does 'gastronomy' really mean?

The following is an example of a curricular map of a Food Systems/Applied Food Study program at the baccalaureate degree level. This map has been added to demonstrate the widening of content knowledge within the new degree model, including the foundational focus on research. Table C-2 follows with the specific course requirements.

Track IV: Food Systems, Nutrition, and the Environment

This track focuses on the importance of sustainable food production systems and critical issues of access to high quality food. The study of food systems, nutrition and the environment has enjoyed a meteoric rise in popularity, as communities and institutions have recognized the importance of sustainable food production systems and high quality food as an integral part of any healthy and just society. This is an inherently interdisciplinary area, requiring students to draw on multiple types of knowledge and methods. To illustrate: the production and distribution of food is affected by cultural norms, individual behavior, social structure, biotechnologies, present and past environments, geopolitical power, and global economic relations. Social movements and cultural preferences, often inflected by race, class, and gender, drive the demand and value of certain foods (such as wild-caught fish, farm-raised animals, or traditional grains), which in turn influence how and where food production takes place.

Food production and consumption has major consequences for the environment, human well-being, and community. Given future human population growth and climatic changes, where will sufficient food be grown?

How can we ensure that we are not producing too many of certain crops, and too few of others? How do we preserve our scarce resources such as water and soil to ensure that we continue to provide a sufficient supply of food at reasonable prices in years to come? Should agricultural land also be used for fuel and energy? How will these decisions affect biodiversity and the planet's natural systems? What is an ideal diet from a human nutritional perspective, and what political-economic barriers to accessing such a diet exist around the world?

Students in this track can choose to take a wide variety of courses, or instead concentrate on issues such as nutrition, global agricultural systems, plant physiology, food justice, rural life and culture, food policy, and environmental ethics. It serves as an ideal preparation for future studies and careers in nutrition and nutritional policy, sustainable food production, and global food systems, grounding students in perspectives that cut across the physical, social, and human sciences with attention to inequality and cultural difference.

Table C-2. *Example of Food Studies Curriculum*

INTRODUCTORY **One of the following courses:**	
ANTH 039-06 Unsustainable Agriculture	Fall
BIO 010/ENV 010 Plants and Humanity	Spring
ENV 009 Food Systems	Fall
NU 101 Introductory Human Nutrition	Spring
METHODS/RESEARCH **One of the following courses:**	
ANTH 161 Fieldwork Lab as a Method	Fall
BIO 132 Biostatistics	Fall

CD 140 Problems of Research: Statistics	Spring
CD 142 Research Methods and Design	Spring
CD 144 Qualitative And Ethnographic Methods In Applied Social Science Research	Spring
CD 146 Applied Data Analysis	Fall
CEE 154 Principles of Epidemiology	Fall, Spring
CEE 194-F Special topics: Principles of Biostatistics	Fall, Spring
CH 030 Community Health Methods	Variable
CH 031 Introduction to Statistics for Health Applications	Fall
EC 013 Statistics	Fall, Spring
EC 130 Topics in Environmental Economics	Spring
ENV 107/GIS 101 Intro to Geographic Information Systems	Fall, Spring
ENV 196-0R/CEE 194 Selected Topics: Introduction to Remote Sensing	Spring
ENV 196-1 & 196-RA Research, Analysis and Communication	Spring
ENV 197/GIS 102 Advanced GIS	Spring
ENV 199 Senior Honors Thesis	Fall, Spring
EOS 104 Geological Applications of Geographic Information Systems	Spring
PS 103 Political Science Research Methods	Spring
PS 115 Public Opinion and Public Survey	Variable
PSY 031 Statistics for Behavioral Science	Fall, Spring
SOC 101 Quantitative Research Methods	Fall
SOC 102 Qualitative Research Methods	Spring
UEP 232/ENV 193 Intro to GIS	Spring
ELECTIVES **Three courses beyond the introductory level from at least <u>two different departments</u> and including<u>one seminar</u> (*). The headers below are only meant to be informative, students are not required to take a given number of courses from each category.**	
<u>CULTURE & HISTORY</u>	
ANTH 126 Food, Nutrition and Culture	Fall

ANTH 149-23 New Food Activism	Spring
HIST 005 History of Consumption	Fall
HIST 014 Historical Perspectives on Contemporary Crises in Africa	Fall
HIST 103 Consumption, Power, and Identity: Food and clothing in modern times *	Variable
HIST 154 Health and Healing in Medieval and Early Modern Europe	Spring
PHIL 025 Food Ethics	Spring
POLICY & ECONOMICS	
ANTH 178 Animals and Posthuman Thought *	Spring
CH 189-02 Seminar in Health Politics: Politics of Food and Fat *	Spring
EC 035 Economic Development	Fall, Spring
EC 130 Topics in Environmental Economics *	Spring
EC 136 Topics in Economic Development *	Spring
EC 192-1 Advanced Seminar in Economics: African Economic Development *	Spring
EC 192 Resource and Environmental Economic Policy	Fall
ED 014 Food and Schools	Fall
ENV 152 Seminar in Environmental Negotiations *	Fall (odd years)
NUTR 215/UEP 223 Fundamentals of US Agriculture *	Fall
NUTR 221 Global Food Business *	Spring
NUTR 224 Community Food Planning and Programs *	Fall, Spring
NUTR 238 Economics of Food Policy Analysis *	Spring
UEP 285 Food Justice: Critical Approaches to Policy and Planning * (w/ instructor's permission)	Fall
SCIENCE & NUTRITION	
ANTH 040 Biological Anthropology	Fall
BIO 108 Plant Development	Spring (odd years)
BIO 118 Plant Physiology	Spring (even years)

BIO 185 Food for All: Ecology, Biotechnology and Sustainability *	Spring (odd years), Summer
CH 184 Globalization and Health *	Fall
NUTR 227 International Nutrition *	Spring
NUTR 330 Anthropology of Food and Nutrition (w/ instructor's permission)	Spring
PSY 025 Physiological Psychology	Fall
PSY 128 Nutrition and Behavior	Fall

Table C-3 is a list of core culinary arts competencies from the Research Chef Association. These standards emerged from a 4-year national workgroup of research chefs who mapped out the required basis of knowledge for the practice of a chef. These competencies significantly expand the current associate's degree model

Table C-3. *Research Chef Association Culinology® Core Competencies*

- Knowledge of Principles of Cooking (e.g., heat transfer, cooking methods, breading/batters)
- Knowledge of Formula and Recipe Development (ratios; e.g., percent vs. per batch, yield)
- Knowledge of Food Safety Practices and HACCP
- Knowledge of Food Sanitation (including prevention of foodborne illnesses, etc.)
- Knowledge of Culinary Fundamentals and Production Systems
- Knowledge of Culinary Uses and Applications of Products
- Knowledge of Flavor Building (e.g., top, mid and base notes; fond, stock, cooking method, seasoning)
- Knowledge of Allergens and Food Intolerances
- Ability to "Convert" from Lab to Plant (e.g., affects of scale up on finished product)
- Knowledge of the Steps of the Product Development Process (e.g., ideation through production startup)
- Knowledge of Weigh and Measurement Conversions
- Knowledge of Functional Ingredients (e.g., acidulants, flow agents, preservatives, enzymes)
- Knowledge of Proteins (e.g., meat, poultry, eggs, seafood, plant proteins)
- Knowledge of Current and Projected Food Trends
- Knowledge of Carbohydrates (including vegetables, fruits, cereals, grains)
- Knowledge of Traditional Stocks and Sauces
- Knowledge of Heat Exchange/Heat Transfer (e.g., how it works/affect on the product)
- Knowledge of General Nutrition (e.g., essential nutrients, USDA guidelines, micro and macro nutrients)

- Knowledge of Food Service Commercial Kitchen Equipment and Tools
- Knowledge of Product Shelf Life (e.g., product shelf life testing, preservation methods, packaging technologies, effects of temperature)
- Knowledge of Fats and Oils (e.g., processing, quality, functionality, nutrition)
- Knowledge of the Application of Nutrition Knowledge (e.g., labels, recipes, healthy eating recommendations)
- Knowledge of Food chemistry and Microbiology (e.g., process lethality validation, contaminants - biological)
- Knowledge of Large-Scale Production (e.g., technologies affecting products)
- Knowledge of Appropriate Documentation (e.g., lab book, specs, process documentation)
- Knowledge of Ingredient Procurement (i.e., how choices affect purchasing, for example seasonality, cost, developing product specifications)
- Knowledge of Product Presentation (i.e., planning and physical details)
- Knowledge of Commercial Flavorings (e.g., process flavors, compound flavors, HVPs, yeast extracts)
- Knowledge of New Technologies
- Knowledge of Quality Issues and Troubleshooting (e.g., mold/yeast/microbial issues, effects of abuse)
- Knowledge of Dairy Products
- Knowledge of Competitive Products and Competitive Product Analysis
- Knowledge of Current Nutrition Trends
- Knowledge of Consumer and Sensory Testing
- Knowledge of Government Food Regulations (e.g., FDA, USDA, NLEA, CFR, appropriate local/international regulations)
- Knowledge of Regional and World Cuisines (including preparation, spicing and presentation)
- Knowledge of Quality Assurance Systems (e.g., process control, lot traceability and recall, food testing: physical, chemical, microbiological, organoleptic)
- Knowledge of Food Service/Commercial Kitchen Operations (i.e., front and back of the house, various types of establishments)
- Knowledge of Research, Methodologies and Experimental Design
- Knowledge of Equipment and Selection, as part of product/process development
- Knowledge of Follow-Through (i.e., production and start-up, internal communication, customer support)
- Knowledge of Packaging (e.g., barrier properties, how packaging affects the product)
- Knowledge of Baking and Pastry
- Knowledge of Strategic Research Planning (e.g., understanding customer needs and how to meet them, long-term product and menu planning, measuring progress)
- Knowledge of Multicultural Product Requirements (e.g., Kosher, Halal)
- Knowledge of Menu Engineering
- Knowledge of Occupational Safety and Health Rules and Regulations (e.g., OSHA)
- Knowledge of Beverages
- Knowledge of Finance (e.g., current economic climate, cost accounting, including cost evaluation of products, ROI and COGs)

- Knowledge of Candies and Confectionaries
- Knowledge of Marketing
- Knowledge of Purchasing (e.g., finance management, vendor management)
- Knowledge of Ship and Distribution Testing
- Knowledge of Charcuterie
- Knowledge of Sales

Table C-4 lists the written and practical exam for the Pro-Chef Certification offered at the Culinary Institute of America. This program has been created for the working chef with a functioning schema, who can quickly obtain chef certification. Courses are rigorous with consistent training and evaluation from faculty established in the field, and recognized within their peer set as international judges. This certification represents the first major break from the American Culinary Federation's dominance in the certification program, and is a recognized program of excellence within the American military, Corporations, Hotels, and National Chains. This researcher participated in two preparatory courses in the Pro-Chef Certification program and was the only civilian participating in the certification preparation.

Table C-4. *Pro-Chef Written and Practical Exam Competencies*

Pro-Chef Level I Certification Written Exams Include:	**Pro-Chef Level I Certification Practical Exams Include:**
Food Costing	Knife Skills
Food Safety	Stocks, Soups, and Sauces
Fundamentals of Nutrition	Competency-based Menu Execution
Weights and Measurement Conversions	Demonstration of Food Safety Principles
Recipe Conversions, Yields, and Culinary Ratios	
Product Identification	

Pro-Chef Level II Certification Written Exams Include:	**Pro-Chef Level II Certification Practical Exams Include:**
Food Science	Baking and Pastry for Chefs
Mediterranean Cuisine	Healthy Cooking and Nutritional Analysis
Basic Baking and Pastry	Garde Manger
Healthy Cooking	Mediterranean Cuisine
Garde Manger	Ingredient and Equipment Identification
Management and Employment Laws	
Financial Analysis	

Level III Pro-Chef Certification Written Exams Include:	**Level III Pro-Chef Certification Practical Exams Include:**
Asian Cuisine	Asian Cuisine
Latin American Cuisine	Latin American Cuisine
Wine Studies	Seasonal Market Basket
Problem Solving and Personnel Management	Wine and Food Pairing
Financial Skills	Personnel Management (Role Playing)
	Financial Management (Case Study)

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