Noncognitive Skills Gap Among Medical Assistant Students: A Quasi-Experimental Design

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Abstract

Employers blame higher education for not preparing graduates for the demands of the workforce, while additional factors streamline education that phases out noncognitive skills development. The problem is graduates of medical assistant programs of Central State Technical College (a pseudonym) are deficient in noncognitive skills such as critical thinking, communication, and professionalism. The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. Grounded in Kolb's experiential learning theory and Bandura's self-efficacy theory, the study contributes to underdeveloped quantitative research of service-learning and fills gaps related to the use in medical assistant education. The research questions evaluated the effect of participation in service-learning on dependent variables associated with program outcome data. Selection criteria were limited to graduates of an accredited program. The treatment group used service-learning and included 13 medical assistant graduates from 2019. The control group did not use service-learning and included 13 medical assistant graduates from 2014. Fisher's exact test, Chi-Square tests, and Mann–Whitney *U* tests were used to test for statistically significant differences in the means of the two independent samples. The data analysis demonstrated an increase in employment rates but did not demonstrate differences of statistical significance. Educators are encouraged to integrate diverse learning activities that promote the development of noncognitive skills. Recommendations to support collaboration between educators and employers are discussed.

Keywords: non-cognitive skills, experiential learning, service-learning, program outcomes, employer satisfaction, Medical Assisting Education Review Board (MAERB)

Dedication

This dissertation is dedicated to a friend and colleague, Eric Ziebell. Eric was a respected medical assistant instructor. He was loyal to the students, his colleagues, the college, and the greater healthcare community. We spent many years working together promoting the profession of medical assisting, while supporting our students and employers. Over the years, Eric became a trusted confidant, a source of motivation, and a great friend. His unexpected death left us deeply saddened. He continues to be missed by many. I dedicate this work in his memory.

Acknowledgments

Thank you to my parents, Bob and Margaret, who showed me the value of hard work and determination. I am sure that baton helped me develop the grit and determination I needed to do this. My husband helped me stay the course when I felt like giving up. Thank you for everything, Bernhard. I also wish to acknowledge our children and their growing families. Thank you Joseph, Jacob, Samuel, Hayden, Jessica, and Patrick. You have each inspired me in unique ways. Kids, dream big and never give up. To my family, I love you with all my heart.

I thank my colleagues who provided me with a great deal of support. Janet Bauer, not only listened to all of my crazy ideas, but also helped me make them a reality. Anne Lemke helped move the needle to promote service-learning in the medical assistant program, across the college, and to our greater communities of interest. Both were the boots on the ground and moved mountains to support the service-learning initiative at the college. Janet and Anne, you are amazing at all you do. I cannot thank you both enough for your friendship and support. None of this could have happened without the two of you.

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Chapter 1: Introduction

Medical assistant students enrolled in Central State Technical College (a pseudonym) complete an educational program spanning two semesters. Students are prepared to conduct a variety of clinical and lab skills, such as measuring vital signs, performing procedures, administering immunizations, and collecting lab specimens. Conversely, medical assistant programs focus primarily on the achievement of cognitive and psychomotor competencies (Medical Assisting Education Review Board [MAERB], 2017). Brown et al. (2013) suggested the many responsibilities of medical assistants warrant additional emphasis on noncognitive skills to promote therapeutic encounters. Noncognitive skills are valued in the labor market. These skills are described as attributes such as perseverance, self-control, attentiveness, empathy, self-efficacy, and resilience to adversity (Kautz et al., 2017).

Ninety-two percent of surveyed executives in the United States express a noncognitive skills gap and 59% blame higher education for a lack of preparing graduates for the demands of the workforce (Slade, 2014). Experts contend the rising cost of college tuition places pressure on institutions of higher education to streamline education (Finch et al., 2013; Slade, 2014). In the process, noncognitive skills development is phased out of curricular requirements (Slade, 2014). Finch et al. (2013) acknowledged the issue through the findings of an exploratory study of factors affecting undergraduate employability. While some argue barriers within higher education prevent curricular focus on noncognitive skills, executives are looking to higher education for answers.

Research of medical assistant educational programs was conducted at a Midwest technical college. Randolph (2016) demonstrated a potential for noncognitive skills development using service-learning, a form of experiential learning that occurs outside of the classroom and

provides an opportunity for students to apply skills in community settings. Quantitative evidence confirms the use of service-learning as a pedagogy to promote noncognitive skills development in nursing programs (Passel, 2015), while findings of qualitative research of a medical assistant program suggest service-learning may be a feasible option in the discipline (Randolph, 2016). Further research on the use of service-learning for the noncognitive skills development of medical assistant students will address findings and implications of past research.

Background of the Problem

The background of the problem is supported by the American Association of Medical Assistants (AAMA) Occupational Analysis Task Force and Core Curriculum Task Force. Research findings of survey data demonstrated a greater demand for noncognitive skills (Finch et al., 2013). Results prompted the MEARB's 2015 curricular revisions and integration of affective Educational Competencies for the Medical Assistant for the Commission on Accreditation of Allied Health Education Program (CAAHEP, 2015) accredited medical assistant programs. Affective curricular competencies were developed to address critical thinking, communication, professionalism, and the ability to work independently and in team settings.

Research in the literature review identifies the responsibilities of medical assistants that warrant additional emphasis on noncognitive skills. Valued by employers, these skills may promote therapeutic encounters (Brown et al., 2013; Kautz et al., 2017). Additional research conducted by Finch et al. (2013) resulted in the recommendation to address the issue of a noncognitive skills gap during educational preparation, explicitly calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills.

Quantitative research of service-learning linked to undergraduate nursing curriculum

validated service-learning as a useful curricular tool for the development of noncognitive skills of students to prepare for the health-care professions (Passel, 2015). A qualitative case study validated a perceived need for noncognitive skills in a medical assistant program of a Midwest technical college, evidenced through feedback from instructors, clinical preceptors, and local employers (Randolph, 2016). Implications of the study included the development of noncognitive skills programming in the classroom, which Randolph (2016) suggested is the logical next step to address the problem.

Statement of the Problem

The problem is graduates of medical assistant programs of Central State Technical College are deficient in noncognitive skills such as critical thinking, communication, professionalism, and the ability to work independently and in team settings (Slade, 2014). Employers seek candidates possessing noncognitive skills. Noncognitive skills are identified as essential skills to foster therapeutic encounters with patients (Brown et al., 2013; Kautz et al., 2017). While the literature supports and links the benefits of experiential learning to curriculum, Tokke (2017) called for further research on noncognitive skills competencies and collaborative models of service-learning experiences.

Research on the general topic of service-learning is underdeveloped (Bringle et al., 2016). A review of research literature associated with a noncognitive skills gap identified gaps in the literature, recommendations, and implications stemming from past research, presenting a need for further research. The research identified an ongoing issue associated with employers' concerns of a noncognitive skills gap and a lack of academic preparation by institutions of higher education (Finch et al., 2013; Murti, 2014).

Additional needs for further research related to service-learning benefits were indicated

by Rutti et al. (2016). Rutti et al. (2016) also cited the potential for research to develop additional service-learning ideas across educational disciplines and curricula. Accredited medical assistant programs link experiential learning to the curriculum through a clinical practicum of a minimum of 160 hours. No requirements exist to incorporate service-learning as a form of experiential learning (MAERB, 2017).

Purpose of the Study

The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. Annually, CAAHEP accredited medical assistant programs are required to collect and report program outcomes related to retention rates, graduate satisfaction rates, employment rate (positive placement in a related field of study, advancing educational degree, or military service), employer satisfaction, credentialing exam participation, and pass rates (MAERB, 2017). Central State Technical College collects the data through the MAERB survey instruments administered through the college's institutional research department. The study used secondary data from Central State Technical College and it was guided by research questions evaluating the differences between categorical values. The categorical values associated with noncognitive skills attainment included employment rates of graduates, employer satisfaction of affective domain, and overall employer satisfaction (MAERB, 2009).

The selection of criteria to evaluate external stakeholder satisfaction is supported by the findings of Rutti et al. (2016). Rutti et al. (2016) identified research needs associated with the program evaluation process related to the benefits of service-learning, emphasizing the need to

evaluate the satisfaction of external stakeholders. The MAERB Employer Survey employs a 5-point Likert scale and comprises 1 question related to the cognitive domain, 2 questions related to the psychomotor domain, 8 questions related to the affective domain, and 1 question related to overall satisfaction. Questions associated with the affective domain correlate to the graduate's use of judgment, communication skills, ethical and professional behavior, ability to accept supervision, punctuality, preparedness, and contribution to a positive environment (MAERB, 2009). These questions assess noncognitive skills.

Independent variable data included the presence or absence of service-learning. Dependent variable data included graduates' employment rates, employer satisfaction of affective domain competency mastery of hired graduates, and overall employer satisfaction of hired graduates. The ex post facto study examined facts occurring naturally and further explored evidence selected for analysis (Salkind, 2010). A nonequivalent group design was selected due to the ability to manipulate the use of service-learning (the independent variable) and the impossibility of random assignment (Cook & Campbell, 1979). The treatment group used the intervention of service-learning, while the control group, a nonrandomly selected control group, did not use service-learning.

Significance of the Study

Employers noted applicants are able to demonstrate appropriate levels of knowledge and technical expertise, but applicants do not demonstrate attainment of noncognitive skills, such as working in a team setting or demonstrating problem-solving abilities (Slade, 2014). In response to the concerns of employer stakeholders, accredited medical assistant programs updated the curriculum in 2015 to include additional preparation of affective domain. Medical assistant programs are also required to incorporate a practicum experience of a minimum of 160 nonpaid

hours upon the conclusion of classroom instruction (MAERB, 2017).

Research of an experiential learning project conducted by Brock et al. (2019) supported the efficacy of experiential learning to promote student growth in affective domain competencies. Some accredited medical assistant programs voluntarily incorporate additional experiential learning requirements related to service-learning. Formalized curricular assessment, which emphasizes enhanced experiential learning experience with service-learning requirements, may be a viable option to address the problem of a noncognitive skills deficiency among medical assistant students at Central State Technical College.

The Central State Technical College's statewide educators meeting can provide an opportunity to convey best practices in curriculum and experiential learning program development. The state's professional society conducts an annual conference, hosting an array of participants. The society seeks annual requests for presentations and findings of topics to engage employers, medical assistant professionals, educators, and students in service-learning. Although efforts are focused within a geographic location, the findings may be beneficial to accredited programs nationally. Results can be shared with the CAAHEP's MAERB (2009) and with the AAMA in hopes to reach a broader audience through publication in the organization's trade journal. The research was supported by the MAERB and was deemed a fascinating area of study to benefit the profession of medical assisting (see Appendix A).

Research Questions

Thomas (2017) noted the importance of incorporating research strategies designed for program evaluation. The process of program evaluation ensures stakeholder representation through stakeholder reviews and member checks to promote ongoing participation and engagement. The MAERB requires accredited medical assistant programs to administer a survey

to employer stakeholders annually. Results are reported to the MAERB through the Annual Report Form, and participating colleges are required to meet threshold standards to maintain accreditation (MAERB, 2019b). The study used previously reported survey data reported to the MEARB and it tested for statistically significant differences between outcomes associated with the use of service-learning (treatment) and an absence of service-learning (control) on the 3 dependent variables: employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction. The following research questions were addressed:

Research Question 1: Is there a statistically significant difference between service-learning participation on employment rates of medical assistant graduates?

Research Question 2: Is there a statistically significant difference between service-learning participation on employer satisfaction of noncognitive skills development in hired medical assistant graduates?

Research Question 3: Is there a statistically significant difference between service-learning participation on overall employer satisfaction of hired medical assistant graduates?

Hypotheses

$H1_0$: No statistically significant difference in employment rates exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H1_a$: A statistically significant difference in employment rates exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H2_0$: No statistically significant difference in mean scores of employer satisfaction of

noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H2_a$: A statistically significant difference in mean scores of employer satisfaction of noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H3_0$: No statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H3_a$: A statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

Theoretical Framework

Research on a noncognitive skills gap among medical assistant students studies the effects of service-learning, which may be used to address a noncognitive skills gap. The theoretical framework of the study was primarily grounded in Kolb's experiential learning theory (A. Kolb & Kolb, 2005) and Bandura's (2012) self-efficacy theory. The study was further supported by additional theoretical frameworks including Lave and Wenger's (1991) situational learning theory and Greenleaf's (2014) servant leadership theory.

D. Kolb (1984) described experiential learning as a process of creating knowledge through grasping and transforming the experience. Situational learning and experiential learning transcend the learning experience to settings outside of a traditional classroom experience. Lave

and Wenger (1991) associated situational and experiential learning with communities of practice. Situational and experiential learning have been categorized with opportunities for students to make personal talents known (Besar, 2018). Self-efficacy can be described as an individual's belief in the ability to accomplish certain tasks, a concept Bandura (2012) associated with a learner's performance mastery.

Bumann and Younkin (2012) described individuals with a high sense of self-efficacy as possessing four influential domains related to self-efficacy: mastery experiences, vicarious experience (social modeling), social persuasion, and physiological response awareness. When faced with setbacks, these individuals actively seek solutions to attain new skills and behaviors that enhance the ability to deal with future potential setbacks. Bumann and Younkin further contended the use of the self-efficacy theory was a vital component to professional performance, engagement, and satisfaction. D. Kolb's (1984) experiential learning theory, Lave and Wenger's (1991) situational learning theory, and Bandura's (2012) self-efficacy theory are associated with service-learning curriculum and were used to evaluate the influence of noncognitive skills development when the form of experiential learning is linked to the curriculum at Central State Technical College.

Definitions of Terms

The focus of the study was the noncognitive skills development of medical assistant students. Educational preparation of students may differ depending on a variety of factors, such as the presence or absence of programmatic accreditation. Definitions of terms presented through the study are provided to clarify details associated with the educational standards and practices of accredited programs.

CAAHEP accreditation is a process of recognizing educational programs meeting the

defined accreditation standards. The CAAHEP works with professional organizations dedicated to allied health professions, including the AAMA, the American Medical Technologists, the National Health Career Association, and the Medical Assisting Review Board. These institutions collaborate to develop, uphold, and support the educational standards for medical assistant programs. The CAAHEP (2015) grants accreditation to educational programs after review and recommendation by the MAERB.

Educational competencies are measured program learning outcomes. The CAAHEP (2015) established standards and guidelines for medical assistant programs. The curriculum is required to meet program goals and learning domains. The MAERB (2017) defined learning domains associated with cognitive (knowledge) objectives, psychomotor (skill performance) competencies, and affective (behavioral) competencies. Students enrolled in CAAHEP-accredited programs are required to demonstrate mastery of all competencies to be eligible for graduation (CAAHEP, 2015).

The *employer satisfaction of affective domain* is related to behavioral competencies introduced during the graduate's educational preparation. Employers provide feedback through the MAERB Employer Survey regarding level of satisfaction of the hired graduate in eight areas: use of judgment, communication, ethical and professional practice, teamwork, ability to accept supervision, responsibility, punctuality, and maintaining a positive work environment (MAERB, 2009).

Employment rates are determined from the MAERB Graduate Survey and used to identify information of graduates. Employment information captured by the instrument includes job title, salary or hourly wage, name of employer, employment as a medical assistant or in a related field, and duration of employment. Graduates who are not employed as medical assistants

or in a related field are asked to disclose their current situations (MAERB, 2019a). MAERB accreditation threshold requirements include a 60% placement rate. *Positive placement* is defined as employment as a medical assistant or in a related field, a graduate continuing education, or serving in the military (MAERB, 2020a).

Experiential learning is a process of creating knowledge through grasping and transforming the learning experience to settings outside of a traditional classroom experience (D. Kolb, 1984). Sudria et al. (2018) categorized experiential learning as performance assessments, problem-based learning, and project-based learning. Some examples of experiential learning include field trips, simulations, role-play exercises, site visits, and internships. Students enrolled in CAAHEP-accredited medical assistant programs are required to complete a supervised, nonpaid clinical practicum in an outpatient health-care setting before graduation (CAAHEP, 2015).

The *MAERB Employer Survey* is a tool designed for the improvement of accredited medical assistant programs. The survey is administered to graduates to identify employer satisfaction of academic preparation related to the cognitive, psychomotor, and affective domains. Employers are also asked to rate their overall satisfaction with the hired graduate (MAERB, 2009). MAERB policies stipulate surveys be administered to 100% of employers who hired graduates to work as medical assistants or in a related field. Program directors of accredited programs must administer the survey within 3–12 months of employment. The survey must adhere to the questions and the Likert scale authorized by the MAERB. MAERB (2020a) accreditation threshold requirements include a minimum 30% participation rate and 80% satisfaction rate.

The *MAERB Graduate Survey* is a tool designed for the improvement of accredited

medical assistant programs. The survey is administered to graduates to identify employment information, certification status, and graduate satisfaction of the educational program (MAERB, 2019a). MAERB policies stipulate surveys are not administered before program completion but within 6 months of graduation. The survey must adhere to the questions and the Likert scale authorized by the MAERB. MAERB (2020a) accreditation threshold requirements include a minimum 30% participation rate and 80% satisfaction rate.

Medical assistants are allied health professionals who work under the direction of a physician, generally in outpatient health settings. Job responsibilities of medical assistants include administrative and clinical responsibilities such as scheduling appointments, data entry in the electronic health record, administering immunizations, and assisting a provider during clinical procedures. The CAAHEP (2015) identified the profession of medical assisting as influential to public health, requiring complex knowledge and specialized skill sets for entry into the profession. Individuals may achieve the skill set through the completion of a CAAHEP-accredited educational program. Graduates may prove knowledge through certification by the AAMA (n.d.).

Noncognitive skills describe a skill set associated with an individual's attitudes, beliefs, and behaviors. Examples of noncognitive skills include critical thinking, communication, professionalism, and the ability to work independently and in team settings (Slade, 2014). In educational settings, noncognitive skills are associated with the affective domain and may be referred to as *21st-century skills* or *soft skills*.

Overall employer satisfaction is assessed through the administration of the MAERB Employer Survey. Employers provide feedback about the level of overall preparedness demonstrated by the hired graduate of the accredited medical assistant program (MAERB, 2009).

Service-learning is a form of experiential learning that incorporates the purposeful application of instruction within the community as an effort to enhance the learning experience, connecting the cognitive learning domain to affective and psychomotor learning domains (Tokke, 2017). Campus Compact (2019) is an organization devoted to the promotion of service-learning and described the intervention as integration between community and curriculum with mutual benefit for students and the community.

Assumptions

All research studies possess certain assumptions (Fraenkel et al., 2012). Lewis-Beck et al. (2004) described assumptions as fundamental beliefs and noted the abundance in social sciences research. Assumptions also are associated with tests. The study used multiple tests. Independent *t* tests, Fisher's exact test, Chi-Square tests, and Mann–Whitney U tests were used.

Assumptions also exist concerning research design and method. The ex post facto study used a quasi-experimental design. An assumption of this design is only one difference exists between the treatment and control groups. The difference is relative to the intervention used (Allen, 2017). The study also used survey instruments. A basic assumption associated with the analysis of survey data is only complete cases are included (Lavrakas, 2008).

Annually, accredited medical assistant programs are required to collect and report program outcomes related to retention rates, graduate satisfaction rates, employment rate (positive placement in a related field of study, advancing educational degree, or military service), employer satisfaction, credentialing exam participation, and pass rates. Central State Technical College collects outcome data through the MAERB surveys administered through the college's institutional research department. Data from the MAERB Employer Survey and Graduate Survey Instrument tools were used to identify dependent variable data points. A primary assumption is

linked to curricular standards. All graduating cohort students completed consistent educational preparation based on the MAERB's (2017) core curricular requirements.

Two assumptions were made concerning the survey instrument. The survey was administered according to accreditation standards, and the survey respondents' participation and responses upheld ethical standards. Wolf et al. (2016) identified issues associated with these assumptions and categorized incentives to participate in a survey relative to social or economic exchange. A survey respondent may be provided a monetary incentive for participation in the survey. The alternative incentive is based on the social exchange theory (Dillman et al., 2014). In a social exchange theory scenario, the respondent participates because of social motivation. Individuals who are socially motivated may participate to seek a nonmonetary incentive for participation. Employers and graduates participating in the survey may choose to do so to strengthen relationships with the college or to provide feedback for program improvement. Wolf et al. described the social exchange as based on mutual understanding or trust.

Scope and Delimitations

The scope and delimitations of the study were controlled to focus on specific groups (McGregor, 2018). Central State Technical College ensures consistency in the assessment of educational outcomes and follows the core curriculum but may choose unique instructional delivery modalities and materials. To ensure curricular standards, one college within the system was evaluated for the research. The focus of the study was centered on secondary data collected for programmatic accreditation reporting. Data of employment rates and employer satisfaction from an accredited medical assistant program at Central State Technical College were analyzed with consideration to the presence or absence of a required service-learning component.

The treatment group completed the academic program with service-learning linked to

curricular requirements. The control group did not use service-learning. The study evaluated outcome variables of employment rates, employer satisfaction of affective domain, and overall employer satisfaction of all medical assistant graduates from the treatment group. Students in the treatment group graduated in 2019. The control group students graduated in 2014, before the use of service-learning.

Additional consideration was granted to limiting the participation criteria to 2014 and 2019 graduates. Service-learning was introduced between 2015-2018 and formally linked to curricular standards with the 2019 graduating groups. The groups selected provided the first opportunity to evaluate and potential differences between graduates who consistently used service-learning with graduates who did not use service-learning. The two groups were also most consistent in size.

Data from the study may provide insight into the use of service-learning as a form of experiential learning. The findings can be used to address the preparation of affective domain and noncognitive skills development for medical assistant students at the college. CAAHEP-accredited colleges follow consistent curricular standards (MAERB, 2017). Results cannot be used as the primary factor to determine if service-learning is a viable option for medical assistant curricular integration. Potential issues may arise with the transferability of the results. Colleges are allowed flexibility to deliver, instruct, and assess the educational content and may not find additional experiential learning feasible.

Limitations

Limitations associated with the research may be related to the internal evaluation of the use of service-learning as a pedagogy to address educational outcomes. Frey (2018) identified multiple limitations associated with internal evaluations, including evaluator credibility and

objectivity. Limitations associated with internal evaluations include the risk that research goals may be convoluted with the program or organization goals. The identified limitation and risk may impede researcher objectivity, preventing further research of unintended outcomes (Frey, 2018). Additional limitations may be associated with the quasi-experimental research design. A limitation of the design may include maturation. Changes that occurred naturally over time may be misinterpreted with the effect of a treatment (Salkind, 2010). Fraenkel et al. (2012) also identified potential limitations due to the absence of random assignment but noted other techniques may be used to reduce threats to internal validity.

Drew et al. (2008) described *internal validity* as the technical soundness of an investigation, while *external validity* is more associated with generalizability. Research is considered externally valid to the degree to which the arrangements, procedures, and participants are representative of the outside setting, thereby allowing the results to generalize or transfer. The sample of graduates is reflective of the population of CAAHEP-accredited medical assistant programs across the nation. National accreditation standards set forth by the MAERB (2017) are developed to promote validity. Graduates followed consistent curricular guidelines and all employers were representatives of health-care organizations.

Potential threats to internal validity may be associated with the ex post facto design of the study. Salkind (2010) noted the lack of ability to control independent variables and nonrandom selection of the subjects pose concerns associated with validity. Nonrandom selection of subjects may also affect external validity by limiting the possibility of statistical inference. An additional potential threat to internal validity exists due to the absence of a pretest–posttest design, which may be overcome if employer participants have a background with the instrument (Drew et al., 2008). Inclusionary criteria were evaluated to ensure matching of treatment and control groups,

granting consideration to consistencies in academic curriculum, instructors, and sample size of each group. All available data were included in the study to reduce the potential for selection bias and to limit misuse or misinterpretation of data (Sica, 2006).

Chapter Summary

Noncognitive skills may be described as behavioral attributes such as perseverance, self-control, attentiveness, empathy, self-efficacy, and resilience to adversity (Kautz et al., 2017). Research related to a noncognitive skills gap points to a lack of educational preparation for the workforce (Finch et al., 2013; Murti, 2014). Health-care employers are seeking graduates with noncognitive skills that may promote therapeutic patient encounters (Brown et al., 2013; Kautz et al., 2017). Additional research conducted by Finch et al. (2013) resulted in the recommendation to address the issue of a noncognitive skills gap during educational preparation, explicitly calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills.

The CAAHEP's MAERB responded to the call, developing educational standards related to the affective domain in 2015. The revised educational competencies addressed the problem of a noncognitive skills gap among medical assistant students, but the issue was not solved. A qualitative case study validated a perceived need for noncognitive skills in a medical assistant program of a Midwest technical college, evidenced through feedback from instructors, clinical preceptors, and local employers (Randolph, 2016). The following literature review provides additional research related to the topic and details the theoretical framework of the study. Benefits and limitations of service-learning as a pedagogy are identified, along with gaps in existing research.

Chapter 2: Literature Review

Medical assistant students enrolled in Central State Technical College (a pseudonym) complete an educational program lasting two semesters. Academic preparation is focused primarily on the achievement of cognitive and psychomotor competencies (MAERB, 2017). The responsibilities of medical assistants warrant additional emphasis on noncognitive skills that promote therapeutic encounters. Noncognitive skills are valued by employers (Brown et al., 2013; Kautz et al., 2017). The problem is graduates of medical assistant programs of Central State Technical College are deficient in noncognitive skills such as critical thinking, communication, professionalism, and the ability to work independently and in team settings (Slade, 2014). The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants.

A search conducted for peer-reviewed literature related to the field of medical assisting and service-learning dating back to 1998 yielded minimal results. The available literature is related to service-learning as an instructional strategy used to prepare those entering medical professions but does not specifically relate to the preparation of medical assistant students. An example is evidenced through quantitative research on service-learning linked to the undergraduate nursing curriculum. The findings of the study validated service-learning as a useful curricular tool for the development of noncognitive skills of students to prepare for the profession of nursing (Passel, 2015).

Further gaps in the literature are associated with the implications of existing research and literature. A qualitative case study validated a perceived need for noncognitive skills in a medical

assistant educational program. The need was evidenced through feedback from instructors, clinical preceptors, and local employers (Randolph, 2016). Implications of the study include the development of noncognitive skills programming in the classroom, which Randolph (2016) suggested as the logical next step to address the problem.

Beyond limited literature associated with the use of service-learning in medical assistant education, additional gaps were recognized. Patil et al. (2020) identified a gap in research associated with service-learning and other forms of experiential learning at the program level. Bringle et al. (2016) further deemed existing literature of service-learning underdeveloped. Finch et al. (2013) recommended addressing the issue of a noncognitive skills gap during educational preparation, explicitly calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills.

Rutti et al.'s (2016) findings of research and recommendations were consistent with additional research needs associated with the program evaluation process. Implications of the research prompted future research, reiterating the need for a study related to the benefits of service-learning, emphasizing the need to evaluate the satisfaction of external stakeholders. Thomas (2017) noted the importance to incorporate research strategies designed for program evaluation, ensure stakeholder representation through stakeholder reviews, and conduct member checks to promote ongoing participation and engagement. Additional needs for further research related to the benefits of service-learning were indicated by Rutti et al., citing the potential for research to develop additional service-learning ideas across educational disciplines and curricula.

While the literature supported and linked the benefits of experiential learning to curriculum, Tokke (2017) called for further research on noncognitive skills competencies and collaborative models of service-learning experiences. The literature review addressed the

problem while elaborating on potential solutions to the problem through curricular assessment of noncognitive skills through service-learning, a form of experiential learning. Strategies and criteria used to conduct the literature search are presented. Chapter 2 details the theoretical framework of the study. A review of research on the noncognitive skills gap, experiential learning, and service-learning as a form of experiential learning is presented. The review demonstrates benefits related to service-learning and viewpoints from those involved in the study and practice of experiential service-learning. The chapter concludes with a summary of themes in the reviewed literature and identifies how the study may fill the gaps to extend the knowledge of service-learning as a pedagogy to address a noncognitive skills gap among those preparing to enter the profession of medical assisting.

Literature Search Strategy

The American College of Education library databases were used for the literature review. The subdirectories within the Academic Search Complete database included Academic Search Complete, Business Source Complete, Education Source, EBSCOhost, ERIC, and others. All subdirectories were included in the search criteria. Sage Premier Journals and Sage Research Methods databases were also used. At times, the Google Scholar web search engine was used to identify additional resources and to support the initial search. Features used during the search included advanced search functions. The year of publication was filtered to identify literature published from 2015 to 2020. The date range was omitted to gather a historical perspective of the literature and research. Additional criteria for advanced search functionality were enabled to identify peer-reviewed and full-text publications. Key search terms used individually or in combination were *service-learning*, *experiential learning*, *Kolb's experiential learning theory*, *medical assistant*, *cognitive-skills gap*, *soft-skills gap*, *outcome-based assessment*, *community*

engagement, *civic engagement*, *higher education*, *health professions*, *self-efficacy theory*, *servant leadership theory*, and *pedagogy*.

Theoretical Framework

Research on a noncognitive skills gap among medical assistant students studies the effects of service-learning, which may be used to address a noncognitive skills gap. The theoretical framework of the study was primarily grounded in Kolb's experiential learning theory (A. Kolb & Kolb, 2005), a theoretical framework closely supported by Bandura's (2012) self-efficacy theory. The study is further supported by additional theoretical frameworks, including Lave and Wenger's (1991) situational learning theory and Greenleaf's (2014) servant leadership theory.

Experiential Learning and Situational Learning to Develop Self-Efficacy

Three theoretical frameworks emerged through the research. D. Kolb (1984) described experiential learning as a process of creating knowledge through grasping and transforming the experience. Situational learning and experiential learning transcend the learning experience to settings outside of a traditional classroom experience. Lave and Wenger (1991) associated experiential learning with communities of practice and categorized it with opportunities for students to draw attention to personal talents (Besar, 2018). Self-efficacy can be described as an individual's belief in the accomplishment of certain tasks, a concept Bandura (2012) associated with a learner's performance mastery.

Kolb's experiential learning theory primarily supported the topics addressed in the literature review. The theory draws on the works of notable researchers in learning and human development with an emphasis on a constructivist theory of learning, creating knowledge through experience (A. Kolb & Kolb, 2005). Sudria et al. (2018) further researched the effect of

Kolb's learning styles under inductive guided-inquiry learning on learning outcomes and called for additional models of experiential learning such as problem- and project-based learning.

The use of experiential learning to achieve noncognitive skills attainment may be related to Bandura's self-efficacy theory. Bumann and Younkin (2012) described individuals with a high sense of self-efficacy as possessing four influential domains related to self-efficacy: mastery experiences, vicarious experience (social modeling), social persuasion, and physiological response awareness. When faced with setbacks, these individuals actively seek solutions to attain new skills and behaviors that enhance the ability to deal with future potential setbacks. Bumann and Younkin contended the use of the self-efficacy theory is a vital component to professional performance, engagement, and satisfaction.

The study was further supported by the situational learning theory (Lave & Wenger, 1991). Situational learning theorists postulate learning takes place outside of the classroom and is embedded within activity and context through placement in a community of practice (Lave & Wenger, 1991). Nieminen and Hytti (2016) conducted a qualitative study through interview and observation analysis of six case studies. The case studies were conducted among communities of practice, reporting on findings of benefits and limitations of experiential learning models in a training program. Practical implications included anticipated benefits such as the social perspective, support from collaboration among peers, and increased levels of confidence among case study subjects.

A Servant Leadership Mindset Through Service-Learning

Greenleaf's (2014) servant leadership theory is associated with an individual's desire to serve others first. Increases in globalization, diversity, and digitization prompted organizations to seek employees and leaders with a mindset associated with servant leadership (Lo et al., 2020).

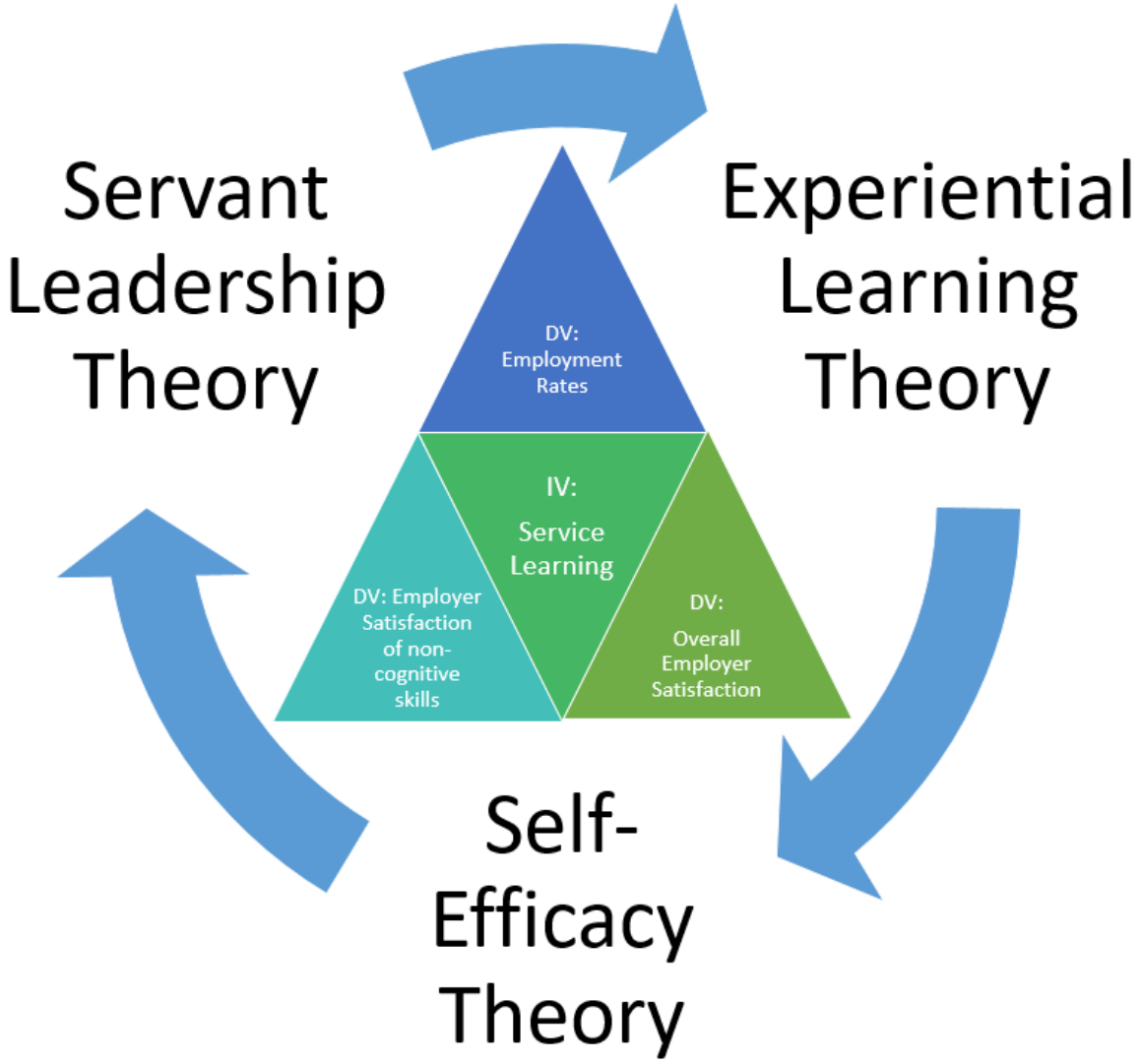
Much evidence supports the rationale for educational preparation fostering a mindset of servant leadership. Additional research findings of a study by Linuesa-Langreo et al. (2016) identified the potential payback associated with servant leadership philosophies. The findings of the research indicated a direct correlation between servant leadership and higher levels of engagement and creativity. Servant leadership has also become associated with positive benefits to organizations with results of higher levels of organizational learning, lower turnover rates, and more helpful behaviors among members of the organization. Organizations embracing servant leadership models have ranked as "a best place to work" (Heyler & Martin, 2018, p. 231).

Wagner and Pigza (2016) developed a theoretical framework that established an intersection between the theory and practice of leadership and service-learning. The framework can be used by educators to develop service-learning practices that may aid students in the development of essential noncognitive skills associated with a leadership skill set. Northouse (2015) asserted leadership development is rooted in self-reflection, an integral component of the service-learning assessment process. Northouse also noted the process of self-reflection provides an opportunity for learners to identify growth and development associated with noncognitive skills such as social appraisal and problem solving.

A cyclical theoretical framework begins with an experiential learning opportunity, taking place in a community of practice (situational learning). Self-efficacy and servant leadership skills development may be associated with the service-learning experience (Bumann & Younkin, 2012; Jeyaraj & Gandolfi, 2019). The service-learning experience is at the center of the framework (see Figure 1). The figure also depicts the relationship between the independent variable, service-learning, and dependent variables related to the three measured program-learning outcomes.

Figure 1

Theoretical Framework



Research Literature Review

A review of research literature associated with a noncognitive skills gap identified the opportunity for further research in response to gaps in the literature, recommendations, and implications stemming from past research. The research identified an ongoing issue associated with employers' concerns of a noncognitive skills gap and a lack of academic preparation by

institutions of higher education (Finch et al., 2013; Murti, 2014). Research literature related to the use of experiential learning pointed to vast benefits and some limitations associated with the use of active learning pedagogy (De Luca & Benden, 2019; Nieminen & Hytti, 2016; Zhang & Blakey, 2012). Specific benefits related to noncognitive skills development were evidenced through a variety of service-learning projects (Aldridge et al., 2015; Bonati, 2018; Rockenbach et al., 2014; Tokke, 2017; Weiler et al., 2013).

Detailed accounts of research studies on the topics associated with the noncognitive skills gap, experiential learning, and service-learning are discussed, and the theories associated with each research study are evaluated. The comprehensive evaluation produced evidence to further support previously identified limitations and implications of existing research used to direct research design and methodologies of the present research. Some similarities and differences in research design emerged as specific research studies were reviewed. Dabke (2017) hypothesized a higher level of perceived noncognitive skills development would correlate to higher levels of student satisfaction. The present study of the noncognitive skills gap among medical assistant students evaluated levels of satisfaction concerning an assessment of noncognitive skills. Rather than a perceived assessment from students, this research focused on the satisfaction of employer stakeholders who hired the medical assistant graduates.

A primary goal of the literature review is related to identifying research literature associated with a noncognitive skills gap and the use of experiential learning options for noncognitive skills development. Themes demonstrating the student development of common noncognitive skills, such as communication and critical thinking, emerged when educators aligned service-learning projects with the curriculum (Bloomquist, 2015). Advanced development of a noncognitive skill set also emerged. Students participating in service-learning

projects demonstrated the adoption of characteristics associated with self-efficacy (Dabke, 2017; Gerholz et al., 2018). Additional advanced development of a noncognitive skill set associated participation in service-learning projects with fostering a servant leadership mindset (Bloomquist, 2015; Romsa et al., 2017). Multiple perspectives identified factors that contributed to the noncognitive skills gap and promoted learning activities to promote noncognitive skills development (Finch et al., 2013; Slade, 2014; Tulgan, 2016).

Noncognitive Skills Gap

Although surveyed executives believed a noncognitive skills gap exists, the majority placed blame on higher education for not adequately preparing graduates for the demands of the workforce (Slade, 2014). Experts contend the rising cost of college tuition places pressures on institutions of higher education to streamline education. In the process, noncognitive skills are being phased out of curricular requirements (Slade, 2014). In addition, Finch et al. (2013) acknowledged the issue through findings of an exploratory study of factors affecting undergraduate employability. While some argue barriers within higher education prevent curricular focus on noncognitive skills, a majority of executives look to higher education for an answer. Chikeleze et al. (2018) cited communication and critical thinking skills as two desirable attributes for new college graduates beginning a job search. Research conducted on a noncognitive skills gap resulted in recommending the issue be addressed during educational preparation, specifically calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills (Finch et al., 2013).

Murti (2014) concurred a need exists for educational programs to emphasize noncognitive skills to enhance employability, providing limited recommendations to focus on local employer needs while acknowledging the difficulty of teaching and assessing these skills.

Research in the field of noncognitive skills was conducted by Tulgan (2016), spanned more than 20 years, and highlighted new perspectives the millennial workforce has to offer. The research pointed to three traits the younger generation lacks: professionalism, critical thinking, and followership (Tulgan, 2016). Brock et al. (2019) also noted the significance for health-care students to develop a noncognitive skill set, attributing the need to the constant changes of the cultural makeup of society and correlated noncognitive skills essential to the delivery of culturally competent health care.

Noncognitive Skills Development Rooted in Self-Efficacy Theory

Self-efficacy is linked to a student's level of self-confidence related to the completion of a specific task. Employers do not feel graduates demonstrate levels of confidence needed for successful performance and critical thinking in the workplace (Chikeleze et al., 2018). A study to evaluate the learning needs of college students showed a relationship to a lack of self-confidence (Chikeleze et al., 2018). Conversely, more than two thirds of graduates surveyed reported a lack of critical thinking skills during academic preparation (Craig, 2016).

Findings of research conducted by Coletta et al. (2019) pointed to the benefits of providing an opportunity for students to achieve higher levels of self-efficacy through classroom experiences, correlating higher levels of self-efficacy to enhanced student outcomes. Gerholz et al. (2018) also correlated student development of self-efficacy to engagement through evaluation of a service-learning project. Dabke (2017) conducted an empirical study grounded in the self-efficacy theory to examine an association between perceived noncognitive skills development and internship satisfaction. Additional objectives of the study were to evaluate other program outcomes associated with cognitive and psychomotor domains.

Dabke's (2017) research explored an association between student satisfaction of the

experiential learning internship and perceived growth of outcomes. Dabke perceived domains of knowledge gains, noncognitive skills development, and work efficacy would demonstrate a positive relationship with higher levels of student satisfaction. A multiple regression analysis was conducted with findings correlating a relationship between student satisfaction of the internship experience and developments, with a significantly positive relationship associated with perceived noncognitive skills development and student satisfaction (Dabke, 2017). Dabke's research demonstrated indicators associated with greater noncognitive skills development, supporting Bumann and Younkin's (2012) assertion related to the use of the self-efficacy theory as a vital component to professional performance, engagement, and satisfaction.

While measuring student satisfaction during the internship experience showed a significantly positive correlation in perceived noncognitive skills development, the research did not respond to actual skills development as evidenced by research conducted to understand the impact of service-learning on self-efficacy and learning outcome measures (Coletta et al., 2019). Dabke's (2017) research also identified gaps and implications associated with Rutti et al.'s (2016) and Thomas's (2017) findings to evaluate external stakeholders for programmatic review. Dabke suggested an experimental design that assessed actual levels of knowledge and skill development could be a more accurate indicator of real versus perceived gains achieved during the experiential learning internship.

Experiential Learning

Zhang and Blakey (2012) presented a case for the use of experiential learning as a pedagogy for noncognitive skill assessment to address employer demand for attributes such as critical thinking, ability to work in a team setting, and positive thinking. Evaluation of an experiential learning project responded to a call for active and deep learning methods and

evaluation of the effects of incorporating specific instructional methods into the curriculum. Findings of a survey administered to approximately 350 information technology managers illustrate the ranking of skills required for employment in the field. The top nine of 17 ranked skills aligned with the results of similar surveys' depictions of noncognitive skills as most needed (Zhang & Blakey, 2012). The identified skill set coincided with Tulgan's (2016) assertion that employers reported a deficiency in skills related to professionalism, critical thinking, and followership.

Employers were surveyed to assess the perception of the effectiveness of sample assessment methods. The highest ranked results were directly related to the use of experiential learning. Assessments involving internships or community-based projects ranked highest, with 83% of respondents indicating very effective (69%) or fairly effective (14%; Zhang & Blakey, 2012). Zhang and Blakey (2012) concluded the research may prove beneficial for linking noncognitive skill instruction to the curriculum through active learning pedagogies. Additional research pointing to the benefits of experiential learning exists. Nieminen and Hytti (2016) conducted a qualitative study through interview and observation analysis of six case studies, reporting on findings of benefits and limitations of experiential learning models in a training program. Practical implications included anticipated benefits such as the social perspective, support from collaboration among peers, and increased levels of confidence among case study subjects.

De Luca and Benden (2019) identified the use of experiential learning in the classroom as a response to the preparation of students entering human service fields and occupations requiring increased interactions with individuals experiencing poverty. The findings of the research uncovered the potential benefits of an active learning approach using experiential learning. The

pedagogy was used as a strategy to develop practice values among the students who learned to demonstrate empathy toward the socioeconomically disadvantaged and to self-evaluate students' levels of power and privilege. Empathy is a characteristic further associated with Greenleaf's (2014) servant leadership theory and an attribute linked to a student's understanding of social responsibility (Jeyaraj & Gandolfi, 2019). The use of experiential learning in De Luca and Benden's study also proved beneficial to faculty who struggled with economic pressures and student demands. The exploration of experiential learning theory provided further insight into an additional opportunity for the development of noncognitive skills (Sudria et al., 2018).

An Experiential Learning Exercise Based on Kolb's Experiential Learning Theory

Sudria et al.'s (2018) research on the effect of Kolb's learning styles prompted recommendations for the development of other models of experiential learning, such as performance assessments, problem-based learning, and project-based learning. Educators have responded by developing experiential learning opportunities taking students outside of the classroom and into actual settings, as evidenced through research literature. While valid, Kolb's experiential learning theory and practice do not stipulate where experiential learning must occur, rather are rooted in an active approach to learning and the creation of knowledge through experience (A. Kolb & Kolb, 2005). Servey and Wyrick (2018) researched the use of role playing as a form of experiential learning used to develop a skill set. The role-play exercises included a facilitated discussion during the exercise, and learners attended a debriefing session after completion of the role-play activity. A survey was administered after the workshop to evaluate the efficacy of the session and to identify skill set development. Quantitative findings correlated to positive perceived outcomes, with 97% of participants noting the usefulness of the material presented (Servey & Wyrick, 2018). Qualitative feedback from the role-play experience

did not elicit the same level of response as quantitative feedback provided. The two types of feedback were also deemed conflicting. Some participants provided comments such as dreading the active/small-group work, role playing adding limited benefit, and feelings of awkwardness and time wasted (Servey & Wyrick, 2018). Additional research related to the use of role playing as a learning strategy identified similar benefits and uncovered gaps with the use of simulations and role playing as a teaching tool (Natrajan-Tyagi et al., 2016).

Servey and Wyrick (2018) identified limitations with the evaluation tool. The inconsistencies in conflicting participant feedback demonstrated similarities with the issue Dabke (2017) identified with a similar survey instrument. Servey and Wyrick identified multiple limitations surpassing the conflicting outcomes of participant feedback. Researchers identified issues associated with a limited number of role-play scenarios and concerns with one facilitator managing multiple role-plays simultaneously practiced by learners in the classroom (Servey & Wyrick, 2018). While role playing was deemed an effective form of experiential learning, the findings of the study did not produce the positive response of internships or community-based projects, as noted by the employer assessment of the perceived effectiveness of experiential learning models (Zhang & Blakey, 2012).

The gaps and limitations introduced (Natrajan-Tyagi et al., 2016; Servey & Wyrick, 2018) are consistent with research by Coppola et al. (2019). The findings identified benefits to the use of high-fidelity simulation with students who prepared for health-care careers in occupational and physical therapy to develop interpersonal skills, but also uncovered multiple challenges and issues with high-fidelity simulation, a highly involved form of simulation. Challenges included significant costs, time commitment, and coordination of complex simulations. Students voiced concern that the use of mannequins was not a realistic experience,

further noting the high-fidelity simulation experience provoked tension and anxiety (Coppola et al., 2019).

An example of effective results modeling the suggestion that community-based service-learning projects were more effective than an in-classroom experience was demonstrated by a community project involving 48 students who prepared for careers in geriatric nursing (Zhang & Blakey, 2012). Long and Gummelt (2020) employed service-learning as a means to promote interpersonal relationships, professional skills, and increased empathy among health-care students. The findings of the study were evidenced through an experiential learning opportunity based on Kolb's learning theory. Long and Gummelt concluded the use of a service-learning project was an effective measure to achieve increases in skills development, including empathy, communication, and confidence. The benefits of service-learning opportunities grounded in the experiential learning theory were identified through the literature (Long & Gummelt, 2020). Additional research also promoted alternative experiential learning pedagogies grounded in situational learning theory as a potentially viable approach to address the noncognitive skills gap (Wolff et al., 2018).

Site Visits: Experiential Learning in the Field Modeled by Situational Learning Theory

Wolff et al. (2018) identified concerns among engineering students related to decreased enrollments, dwindling retention and graduation rates, and graduates who pursue employment in non-engineering-related fields. Some of these issues were related to concerns surrounding a lack of noncognitive skills development among students who lacked explicit training in noncognitive skills and consequently a lack of skills such as time management, problem solving, and study skills. Wolff et al. pointed to educators in engineering being prone to adopt problem- and project-based learning models, as suggested by Sudria et al. (2018), but also identified evidence

these efforts did not produce results.

Wolff (2017) argued the engineering curriculum is generally standardized and most instructional delivery and learning takes place within the right quadrants of the epistemic plane, within planes associated with purist and doctrine insight. Conversely, real-world problem solving occurs on the left side of the epistemic plane in situational and knowing quadrants. These quadrants are generally not associated with engineering curriculum and delivery. Wolff et al. (2018) identified potential benefits of conducting learning in the situational plane through site visits, suggesting the engagement with industry through lectures and professional networking would solicit noncognitive skills development related to professional and ethical conduct. The experience presented an additional opportunity to gain exposure to best practices in teamwork, along with new and emerging technologies and practices students would not have the opportunity to experience in the classroom.

Seventeen students were selected to participate in a series of six site visits spanning 5 days (Wolff et al., 2018). A survey instrument was used to assess student perceptions of short- and long-term noncognitive outcomes such as career goals and confidence levels. The instrument was administered in a pretest–posttest design. The pretest–posttest design was identified as an assessment measure in other studies (Aldridge et al., 2015; Romsa et al., 2017) evaluated in the literature review. Ma et al. (2019) considered the evaluation tool a common and useful method of programmatic assessment.

Analysis of student reflections demonstrated a shift in mindset and pointed to noncognitive skills development (Wolff et al., 2018). The study provided evidence of the efficacy of experiential learning as a pedagogy for the use of noncognitive skills development. The analysis provided further research literature from the student's perspective but did not

respond to previously identified gaps in the research or implications associated with student perception of skill development (Dabke, 2017). The formal assessment of student performance may provide more insight into actual outcomes (Dabke, 2017; Rutti et al., 2016; Thomas, 2017).

Service-Learning as a Form of Experiential Learning

Experiential learning may take place inside or outside of the classroom. Curricular models associated with case studies and site visits were deemed beneficial to skill development among learners, but limitations to these forms of learning were identified (Wolff et al., 2018). Servey and Wyrick (2018) presented arguments for the use of simulations as a form of experiential learning, noting benefits associated with students' ability to practice skills in a safe setting, the opportunity to reflect on the experience, and the ability to gain alternative perspectives from participating in a more realistic experience. An additional form of experiential learning exists and may provide these benefits, in addition to the benefit of practice in an even more realistic setting than simulation and role playing in the classroom. Service-learning is a form of experiential learning that incorporates the purposeful application of instruction within the community as an effort to enhance the learning experience, connecting the cognitive learning domain to affective and psychomotor learning domains (Tokke, 2017). Concerning the benefits identified, the pedagogy may be leveraged as a teaching method and curricular tool to further aid students' skill development.

Tokke's (2017) research pointed to experiential learning as a viable option to enhance the learning experience through service-learning and deemed the pedagogy an opportunity to connect cognitive learning domains to affective and psychomotor learning domains. Research of an experiential learning project conducted by Brock et al. (2019) supported the efficacy of experiential learning to promote student growth in affective domain competencies. A systematic

review of educational experiences of health-care professionals who participated in experiential learning indicated the comprehensive development of emotional growth. Although some participants noted feelings of anger and sadness emerging from the cultural connection projects, many participants indicated gaining a sense of appreciation and a renewed passion and purpose for their careers (Brock et al., 2019).

Tokke (2017) presented service-learning projects completed through a community college's business program, noting students' reflections of benefits related to noncognitive skills development. Benefits reported ranged from public speaking skills to problem-solving skills, collaboration, and time management. Bonati (2018) identified additional benefits of the pedagogy as a framework for collaborative planning and the opportunity to meet diverse student learning needs. Beyond the central theme of service-learning, Rockenbach et al. (2014) explored the practice as an effort to foster meaning, purpose, and enduring commitments to community service by linking service-learning beyond grades or degree and course requirements. Intermediate outcomes emerged related to vocational benefits, compassion benefits, and life goals. Analyzed historical effects showed a correlation between citizenship, life goals, and positive intensity of service work 6 years after college entry.

Weiler et al. (2013) presented research surrounding the central theme of service-learning, with an emphasis on at-risk youth. Although service-learning is accepted as a pedagogical strategy, little research exists related to the effects of service-learning associated with medical assistant curriculum. Weiler et al. focused on the consequences of service-learning projects geared toward a specific group of at-risk youth and provided further evidence to the value of service-learning. Students, community members, and researchers of service-learning obtained benefits from the experiences. Aldridge et al. (2015) conducted research on accounting students

participating in service-learning curriculum. Findings of the research demonstrated an increase in knowledge application and employability skills among the student participants.

The Intersection of Experiential Learning and Service-Learning

Culhane et al. (2018) conducted a single embedded case study of an institution of higher education linking teaching and learning goals to an interdisciplinary approach through experiential learning, specifically promoting community engagement. The researchers asserted the use of service-learning could be leveraged to promote a practice of scholarship through communities of practice, while providing benefit to the local area and ultimately allowing students to connect the experience gained through the service-learning project to the curriculum. The purpose of the research was to show the intersection of service-learning as an integral approach to achieving outcomes associated with the institution's teaching and learning goals (Culhane et al., 2018). Implications of Thomas's (2017) research suggested further research on service-learning and its impact on program learning goals. While Culhane et al.'s objective were to evaluate outcome measures and service-learning, the focus was aimed toward institutional objectives.

The case study employed the use of interviews with faculty and external community stakeholders (Culhane et al., 2018). Observational analysis of participants was conducted, and analyses of curricular tools were performed. The findings of the research produced both challenges and best practices associated with the use of service-learning. Qualitative feedback provided through faculty interviews alluded to a perception of discounting the pedagogy worthy of academic merit (Culhane et al., 2018). Service-learning models may also be met with resistance by students. Romsa et al. (2017) noted challenges with negative student perceptions and attitudes of service-learning, noting some felt the requirement was an unnecessary activity,

indicating difficulty for students to realize the potential of the service-learning project as a tool for leadership development.

Best practices related to the use of an interdisciplinary approach and reflection as an assessment component of the service-learning experience emerged from the study by Culhane et al. (2018). The significance of a reflection activity linked to service-learning consistently emerged through the literature reviewed (Bonati, 2018; Coletta et al., 2019; Jeyaraj & Gandolfi, 2019; Northouse, 2015; Romsa et al., 2017; Servey & Wyrick, 2018; Swacha, 2018; Tokke, 2017). At times, the reflective component provided insight for students to overcome negative perceptions and attitudes regarding the service-learning experience, and, ultimately, the researchers illustrated service-learning as a means to bridge theory and knowledge gained in the classroom to practice in real-world settings (Culhane et al., 2018).

Tokke (2017) noted the potential for relationship building with interdisciplinary service-learning projects, a concept supported through Bonati's (2018) recommendation that educational institutions focus on interdisciplinary curricula for enhanced outcomes. Culhane et al. (2018) described service-learning as a form of experiential learning, involving an interdisciplinary approach and community engagement. Culhane et al. further noted the intersection of the three components overlapping to create a service-learning experience. The focus of enhanced outcomes may prompt educators to address other advanced noncognitive skills.

Developing Leaders Through Service-Learning

Romsa et al. (2017) contended leadership is a skill needed in all areas of society and presented findings of research related to student reflection of leadership skills through participation in service-learning activities. Recommendations emerged from the study, prompting educators to consider the use of service-learning activities as a pedagogy to develop

leadership skills. The notion was further supported by Jeyaraj and Gandolfi (2019), who correlated pedagogies to developed servant leadership skills such as trust, dialogue, and empowerment. Recommendations to use service-learning as a mechanism to aid in the development of noncognitive skills associated with a servant leadership mindset may present challenges.

Educators have the potential to elevate students' noncognitive skills; however, situational characteristics play an important factor in the ability to accomplish the goal. Ragaisis (2018) asserted leaders in higher education are discovering autocratic leadership styles are unsuccessful in addressing the hurdles encountered in educational institutions. Leaders in higher education may benefit from alternative means. The notion was further supported by Brown (2012), who contended leaders of the 21st century are obligated to develop equilibrium between interdependence, diversity, and self-governance through moral principles and practice.

Educators who demonstrate these characteristics and behaviors could leverage the pedagogy of service-learning by empowering the voices of students through a practice rooted in moral principles (Choudhary & Paharia, 2018). Many leadership styles exist, although the development of a servant leadership skill set may better prepare students to meet the needs of employers (Bloomquist, 2015).

Reflecting on Service-Learning to Develop Noncognitive and Servant Leadership Skills

An example of a service-learning experience detailing the relationship between the pedagogy and noncognitive skills development of a servant leader mindset was demonstrated through a project by Bloomquist (2015). Bloomquist participated in a service-learning project and noted the significance of the self-reflection component of the experience, supporting Northouse's (2015) assertion of leadership development being rooted in the self-reflection

component of the service-learning assessment process.

Bloomquist (2015) reflected on a growth mindset, a reflection through a project involving interaction with the socioeconomically disadvantaged. The experience resulted in self-awareness of a "relatively privileged experience" (Bloomquist, 2015, p. 171). The practice also provided a basis for implications associated with economic issues and low digital literacy rates among members of the community served. Consistent with De Luca and Benden's (2019) analysis, service-learning could be used as a catalyst to help students develop noncognitive skills such as demonstrating empathy.

Rubenstein et al. (2018) also researched the potential for noncognitive skills development with service-learning projects through thematic coding and analysis of student reflection data. The purpose of the study was to examine the impact of service-learning on the development of noncognitive skills. Using Kolb's experiential learning theory, the researchers studied a sample size of 20 students' reflective journals related to service-learning activities. The findings of the study produced themes surrounding noncognitive skills development in areas of confidence, cultural competence, risk taking, relationship building, and leadership (Rubenstein et al., 2018).

Gap in Literature

Experiential learning models include simulation, role playing, site visits, and service-learning. The literature review detailed the benefits of all forms of experiential learning and pointed to specific limitations associated with the use of simulation and role-playing activities (Coppola et al., 2019; Natrajan-Tyagi et al., 2016; Servey & Wyrick, 2018). The use of service-learning as a pedagogy occurs outside of the classroom and bridges an intersection between theory and practice (Culhane et al., 2018; Wagner & Pigza, 20016). The literature demonstrated limitations in research and implications for further studies, supporting the significance of

quantitative research about the use of service-learning as a form of experiential learning, specifically at the programmatic level.

Swacha (2018) noted the use of service-learning as a pedagogy, and research on the topic spans more than 2 decades. While general research exists, research related to the use of service-learning in specific disciplines is limited. The notion was supported by Patil et al. (2020), who identified a gap in research associated with service-learning and other forms of experiential learning at the program level. Bringle et al. (2016) further deemed existing literature of service-learning underdeveloped. Research by Brail (2016) also pointed to limitations of research associated with service-learning and learning outcomes, noting limited quantitative research. Brail further contended service-learning research has been dedicated to the evaluation of qualitative evidence, and little research exists relative to the measurement of quantitative educational outcomes.

Further gaps in the literature are associated with the implications of existing research and literature. A qualitative case study validated a perceived need for noncognitive skills in a medical assistant educational program; the need was evidenced through feedback from instructors, clinical preceptors, and local employers (Randolph, 2016). Implications of the study included the development of noncognitive skills programming in the classroom, which Randolph (2016) suggested was the logical next step to address the problem. The recommendation coincided with recommendations stemming from Finch et al.'s (2013) research calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills.

Chapter Summary

The research conducted on D. Kolb's (1984) experiential learning theory, Lave and Wenger's (1991) situational learning theory, Bandura's (2012) self-efficacy theory, and

Greenleaf's (2014) servant leadership theory illustrated consistency among findings of the benefits of service-learning and other forms of experiential learning. Limited information exists regarding whether the approach is an effective teaching method to address the noncognitive skills gap of medical assistant students. Rutti et al.'s (2016) recommendation for future research reiterated the need for a study related to the benefits of service-learning and highlighted the need to evaluate the satisfaction of external stakeholders, consistent with additional research related to program evaluation.

Thomas (2017) noted the importance of incorporating research strategies designed for program evaluation. The process of program evaluation ensures stakeholder representation through stakeholder reviews and member checks to promote ongoing participation and engagement. Additional needs for further research related to the benefits of service-learning were indicated by Rutti et al. (2016), citing the potential for research to develop additional service-learning ideas across educational disciplines and curricula. The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants.

Program outcome data of medical assistant student cohorts were analyzed considering the presence or absence of the service-learning instrument. Employment rates and employer survey data (see Appendix B) were evaluated. The survey instrument employed a 5-point Likert scale to collect employer feedback associated with level of overall satisfaction of hired graduates and level of satisfaction related to hired graduates' noncognitive skills development. Employment and survey data, using the pretest–posttest design, were analyzed. The literature review identified the instrument as a common and useful method of programmatic evaluation (Aldridge et al.,

2015; Ma et al., 2019; Romsa et al., 2017).

Data collected may fill a gap associated with limited research of service-learning at the programmatic level (Patil et al., 2020), address Finch et al.'s (2013) recommendation to link program outcomes to the achievement of noncognitive skills, and respond to a call for additional research related to evaluating the satisfaction of external stakeholders as a component of the program evaluation process (Rutti et al., 2016; Thomas, 2017). Additional gaps in the research were addressed through response to Randolph's (2016) recommendations related to further development and research on noncognitive skills programming in the medical assisting classroom. The survey instruments, along with further details related to research methods and design, are described in Chapter 3.

Chapter 3: Methodology

Medical assistant students enrolled in Central State Technical College (a pseudonym) complete an educational program lasting two semesters. Students are prepared to perform a variety of clinical and lab skills, such as measuring vital signs, performing procedures, administering immunizations, and collecting lab specimens. Conversely, medical assistant programs are focused mainly on the achievement of cognitive and psychomotor competencies (MAERB, 2017). The responsibilities of medical assistants warrant additional emphasis on noncognitive skills that promote therapeutic encounters (Brown et al., 2013). Noncognitive skills are valued in the labor market and can be described as attributes such as perseverance, self-control, attentiveness, empathy, self-efficacy, and resilience to adversity (Kautz et al., 2017).

The problem is graduates of medical assistant programs of Central State Technical College are deficient in noncognitive skills such as critical thinking, communication, professionalism, and the ability to work independently and in team settings (Slade, 2014). The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants.

The treatment group used the intervention of service-learning, while the control group, a nonrandomly selected control group, did not use service-learning. The following research questions and hypotheses guided the study:

Research Question 1: Is there a statistically significant difference between service-learning participation on employment rates of medical assistant graduates?

$H1_0$: No statistically significant difference in employment rates exists between the

treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H1_a$: A statistically significant difference in employment rates exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

Research Question 2: Is there a statistically significant difference between service-learning participation on employer satisfaction of noncognitive skills development in hired medical assistant graduates?

$H2_0$: No statistically significant difference in mean scores of employer satisfaction of noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H2_a$: A statistically significant difference in mean scores of employer satisfaction of noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

Research Question 3: Is there a statistically significant difference between service-learning participation on overall employer satisfaction of hired medical assistant graduates?

$H3_0$: No statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H3_a$: A statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control

group, a nonrandomly selected control group, not using service-learning.

The rationale for the research design chosen for the study is detailed in the following section. Details of recruitment and selection of the study sample are explained. Data collection, reliability and validity, and analysis of data are included. Ethical considerations to the process of data collection are identified, and the section concludes with a summary of key points.

Research Methodology, Design, and Rationale

The MAERB (2017) revised the curricular standards in 2013, incorporating curricular competencies related to the affective domain in response to problems related to noncognitive skills deficiency among graduates of medical assistant programs. Employers are voicing concern over the level of preparedness today's applicants exhibit. Applicants demonstrate appropriate levels of knowledge and technical expertise but do not demonstrate attainment of noncognitive skills such as working in a team setting or demonstrating problem-solving abilities (Slade, 2014).

Accredited medical assistant programs link experiential learning to the curriculum through a clinical practicum of a minimum of 160 hours (MAERB, 2020a). Some programs require additional experiential learning through service-learning. Quantitative evidence exists to confirm the use of service-learning as a pedagogy to promote noncognitive skills development in nursing programs (Passel, 2015). Findings of qualitative research of a medical assistant program suggest service-learning may be a feasible option in the allied health discipline (Randolph, 2016).

A quasi-experimental research design responds to Randolph's (2016) qualitative research of service-learning in a medical assistant program to address findings and implications of quantitative research of the intervention when associated with medical assistant programs. Additional evidence supporting the rationale for a quantitative design was identified through the

literature review. The literature review uncovered limitations in research and implications for further studies, supporting the significance of quantitative research about the use of service-learning as a form of experiential learning, specifically at the programmatic level (Culhane et al., 2018; Wagner & Pigza, 2016). The ex post facto study with a nonequivalent group design was selected due to the ability to manipulate the use of service-learning (the independent variable) and the impossibility of random assignment (Cook & Campbell, 1979).

The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. The study was guided by research questions investigating potentially statistically significant differences among categorical values. The categorical values associated with noncognitive skills attainment included employment rates of graduates, employer satisfaction of affective domain, and overall employer satisfaction (MAERB, 2009).

The treatment group used the intervention of service-learning, while the control group, a nonrandomly selected control group, did not use service-learning. Independent variable data included the presence or absence of service-learning. Dependent variable data included employment rates of graduates, employer satisfaction of affective domain competency mastery of hired graduates, and overall employer satisfaction. The outcome data of the treatment group and the control group were evaluated to identify whether a potential statistically significant difference exist among indicators of noncognitive skills development between those who participated in the service-learning curriculum and those who did not participate in the service-learning curriculum. The dependent variables of employment rates, the mean scores of employer

satisfaction of affective domain, and the mean scores of overall employer were evaluated to study potential differences between the results of the treatment group and the control group. Employment rates were identified through the MAERB Graduate Survey and assigned with a nominal scale. A value of 1 represented *yes* and a value of 0 represented *no*. Employer satisfaction scores were ordinal and based on a 5-point Likert scale. Employer satisfaction was determined by the mean of affective domain-related question scores from Q4-Q11 on the MAERB Employer Survey. Overall employer satisfaction was determined by the scored response to 1 question, Q12, on the MAERB Employer Survey.

Selection of the treatment group considered student sample size to ensure the ratio of variance did not exceed 4:1. If the ratio of variance is maintained, heterogeneity is not considered a threat to validity (Allen, 2017). Independent-samples *t* tests were used to determine whether a statistically significant difference existed between the two groups relative to employer satisfaction of affective domain and overall employer satisfaction. Independent-samples *t* tests were used to facilitate the comparison of means to determine whether the groups are statistically significantly dissimilar (Nishishiba et al., 2014).

Program outcome data of employment rates, employer satisfaction of affective domain of hired graduates, and overall employer satisfaction can be related to noncognitive skills development. The study employed an ex post facto design to examine facts that occurred naturally in the past, through the analysis of employment rates and measures, employer satisfaction of affective domain, and overall employer satisfaction (Salkind, 2010). The findings of the study may be disseminated through various media. Findings may be shared with the 16 technical colleges of the system, accreditation review boards, professional organizations, and local employers. Research may be used to develop best practices related to curriculum

development and experiential learning opportunities.

Role of the Researcher

Experience as a medical assistant instructor and program director of a medical assistant program granted accreditation through the CAAHEP, member of the AAMA, and holder of the Certified Medical Assistant credential provided a framework for research. These factors guided ethical research practices through adherence to the AAMA (2021) Code of Ethics, a commitment to confidentiality, and the quest for continual improvement of knowledge and skills of medical assistants. At the time of research, I was employed as an academic associate dean of Central State Technical College and a member of the institution's community engagement cross-functional team. The team focuses on community engagement through the development of service-learning activities and assessments. The college offers an accredited medical assistant program. I serve in a voluntary capacity as an accreditation site surveyor for the CAAHEP's MAERB.

The participating college was informed participation was voluntary and no punitive repercussions existed for choosing not to participate. The participating college did not receive incentives for participating in the study. Research ethics committees may consider the use of monetary incentives to promote participation in research to be coercive (Singer & Couper, 2008). Historical accreditation survey data were used and there were no human subjects involved, eliminating the risk of coercion of participation.

The participating college retained the right to withdraw from the study. Historical data of accreditation outcomes of the treatment and control groups did not include individual identifiers of students or employers. Survey instrument data were entered into SPSS (Version 28). During the data entry process, a numeric code was assigned to each student. Employment and job-related

responsibilities with the treatment group, AAMA membership, and affiliation with the MAERB did not impose a bias on the research study. All available data were included in the study to reduce the potential for selection bias and to limit misuse or misinterpretation of data (Sica, 2006).

Research Procedures

This section on research procedures contains information on the population and sample selection, instrumentation, intervention, and data collection and preparation. A detailed description of the instruments used to study the intervention of service-learning is provided. The population for the sample is described.

Population and Sample Selection

Secondary data collected for programmatic accreditation reporting were used for the standards of consistency and for ethical research practices. Data of employment rates and employer satisfaction from an accredited medical assistant program in Central State Technical College were analyzed with consideration to the presence or absence of the required service-learning component. Standardized curriculum was used across groups with added experiential learning outcomes linked to the treatment group. The treatment group completed the academic program with service-learning linked to curricular requirements. The control group did not use service-learning. The study evaluated the dependent variables of employment rates, employer satisfaction of affective domain, and overall employer satisfaction of all medical assistant graduates from the treatment group. The treatment group graduated in 2019, after the use of service-learning. The control group students graduated in 2014, before the use of service-learning. Participation criteria were limited to 2014 and 2019 graduates.

The participating college was recruited through email (see Appendix C). The email

included the purpose and overview of the research and questionnaire to determine interest in participation and appropriateness of selection. Participation in the study was limited to Central State Technical College, which incorporated the use of service-learning as a curricular intervention after the 2015 MAERB curriculum updates. The site permission packet and Institutional Review Board (IRB) approval are included (see Appendices D & E).

The control group was evaluated for consideration of student sample size to ensure the ratio of variance did not exceed 4:1 (Allen, 2017). The sample size of the treatment group was 37 medical assistant graduates from 2019. The sample size of the control group was 36 medical assistant graduates from 2014. A priori sample size for calculation for *t* tests was performed to ensure the appropriateness of sample size. The calculation was performed based on a power analysis of anticipated effect size, Cohen's $d = .8$, desired statistical power level = .8, and probability level = .05. Cohen's *d* effect size data of .8 is considered a high effect size for an independent-samples *t* test (Salkind, 2010). The minimum total sample size was identified as 52. The minimum sample size per group was 26 (see Appendix F).

Instrumentation

Accredited medical assistant programs are required to collect and report program outcomes annually related to retention rates, graduate satisfaction rates, employment rate (positive placement in a related field of study, advancing educational degree, or military service), employer satisfaction, credentialing exam participation, and pass rates. Central State Technical College collects outcome data through the MAERB surveys administered through the college's institutional research department. Permission to use the MAERB Employer Survey and MAERB Graduate Survey instruments was requested (see Appendix G) and granted (see Appendix A).

The survey instruments are administered electronically to graduates and employers,

consistent with MAERB (2020a) policy. Data are tracked by the program director and reported annually to the MAERB, through the secure online dashboard-reporting tool (see Appendix B). Accredited colleges are required to adhere to threshold standards related to employer participation, graduate participation, employer satisfaction, and graduate satisfaction. Colleges are required to attain a minimum 30% participation rate and a minimum 80% satisfaction rate with each group (MAERB, 2019c). Accreditation standards also stipulate colleges attain a 60% employment rate.

The MAERB Graduate Survey was designed for the improvement of accredited medical assistant programs. The survey is administered to graduates to identify employment information, certification status, and graduate satisfaction of the educational program (MAERB, 2019a). The MAERB Graduate Survey employs 10 fill-in-the-blank response fields and 11 questions using a 5-point Likert scale. The 5-point Likert scale assigns a response of 1 to a rating of *strongly disagree* and a response of 5 to a rating of *strongly agree*. The scale is associated with the cognitive domain, the psychomotor domain, the affective domain, and overall satisfaction. MAERB policies stipulate surveys are not administered earlier than program completion but within 6 months of graduation (MAERB, 2019c). The survey instrument (see Appendix H) is available online for public use (MAERB, 2019a).

The MAERB Employer Survey employs a 5-point Likert scale assigned to each question and comprises one question related to the cognitive domain, two questions related to the psychomotor domain, eight questions related to the affective domain, and one question related to overall satisfaction. Questions associated with the affective domain correlate to the graduate's use of judgment, communication skills, ethical and professional behavior, ability to accept supervision, punctuality and preparedness, and contribution to a positive environment (MAERB,

2009). The eight questions related to affective domain assess noncognitive skills. The following scoring range is used: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. The MAERB (2009) considers a score of 3 or higher favorable. The survey must adhere to the questions and the Likert scale authorized by the MAERB. MAERB policy stipulates the survey be administered 3–12 months after the graduate becomes employed (MAERB, 2019c). The survey instrument (see Appendix I) is available online for public use (MAERB, 2009).

Intervention

Service-learning is a form of experiential learning that incorporates the purposeful application of instruction within the community as an effort to enhance the learning experience, connecting the cognitive learning domain to affective and psychomotor learning domains (Tokke, 2017). Tokke (2017) presented service-learning projects completed through a community college's business program, noting students' reflections of benefits related to noncognitive skills development. Benefits reported ranged from public speaking skills to problem-solving skills, collaboration, and time management. Bonati (2018) identified additional benefits of the pedagogy as a framework for collaborative planning and the opportunity to meet diverse student learning needs.

All graduating cohorts used in the research of a noncognitive skills gap among medical assistant students were sampled from Central State Technical College. All samples comprised graduating cohorts who completed educational programs spanning two semesters. The treatment group and the control group maintained consistent curricular competencies related to the affective domain and assessed the same set of nationally recognized educational competencies (MAERB, 2017). The treatment group used the curricular intervention of service-learning, while

the control group, a nonrandomly selected control group, did not use service-learning. Independent variable data included the presence or absence of service-learning.

The graduating students of the treatment group completed the curricular requirements with additional experiential learning beyond the 160-hour clinical practicum. Forty hours of experiential learning through required service-learning were completed through the duration of the student's enrollment in addition to the clinical practicum, which was completed during the capstone course. Graduates of the control group completed the clinical practicum of 160 hours during the capstone course and did not participate in the additional 40 hours of service-learning.

Students participating in service-learning were required to complete a total of 40 hours of service-learning, before the clinical practicum placement. The service-learning activities completed by the students aligned with program coursework. The activities were completed in a public/community setting with a nonprofit organization, governmental agency, community group, church, school, or health-care organization. Activities were preapproved by the medical assistant practicum coordinator, logged by the student, and signed off by the sponsoring agency. Students participating in the service-learning experience were required to complete a reflection. Students were directed to reflect on how the experience provided preparation for the clinical site placement and how the experience will assist the student with career goals (see Appendix).

Data Collection and Preparation

Site permission to review student records was solicited (see Appendix C) and sent to the school email address of the director of institutional effectiveness, vice president of academics, and medical assistant program director. After the technical college granted IRB approval of the research (see Appendix E), the secondary raw data of 2014 and 2019 MAERB Employer Surveys and Graduate Surveys were received through a secure Sharepoint site and organized.

The independent variable was the presence or absence of the participation of service-learning (treatment vs. control).

The dependent variable in Research Question 1 was employment rates and was obtained through the MAERB Graduate Survey (see Appendix H). The college administers MAERB survey instruments annually to identify employers of graduates. Graduates were asked to self-disclose information on employment, certification, and satisfaction with the educational program. Employment information captured by the instrument included job title, salary or hourly wage, name of employer, employment as a medical assistant or related field, and duration of employment. Employment information was obtained through fill-in-the-blank responses. The survey was administered by the college's institutional research department via an automatically generated email from Qualtrics. The MAERB Graduate Survey was disseminated in December or January for December graduates and June for May graduates, consistent with the MAERB timeline, which stipulates graduate survey administration 0–6 months after graduation (MAERB, 2019c).

Graduates respond to the questions related to employment. The program director verifies employment, continuing education, or military service and tracks the data on the Excel tracking tool (see Appendix K). The dependent variable in Research Question 2 was employer satisfaction of noncognitive skills development, and the dependent variable in Research Question 3 was overall employer satisfaction. Data to address the dependent variables associated with Research Questions 2 and 3 were obtained through the MAERB Employer Survey (see Appendix I).

Research Question 2 was related to employer satisfaction of the affective domain. Data derived from Q4–Q11 of the MAERB Employer Survey (see Appendix I). The employer satisfaction of the affective domain of each student was determined by the average of the scores

of Q4–Q11. Overall employer satisfaction of each student derived from the score of Q12 of the MAERB Employer Survey. The survey is disseminated to employers annually in January, consistent with the MAERB timeline, which stipulates survey administration 3–12 months after the graduate becomes employed (MAERB, 2019c). Table 1 illustrates the results of the MAERB Graduate Survey, including the total graduates for each year, survey administration dates, number of completed surveys, and participation rate.

Table 1

MAERB Graduate Survey Data

Variable	2014	2019
Total graduates	36	37
Survey administration dates (*n* graduates)	Jun 2014 (17) Jan 2015 (19)	Jun 2019 (17) Dec 2019 (15) Jan 2020 (5)
Completed surveys	29	37
Participation rate	81%	100%

Note. The college completes two to three medical assisting cohorts annually with varying start and completion dates. All graduates receive surveys. Surveys are administered the month after graduation, consistent with MAERB accreditation requirements.

The college collects employer satisfaction of hired graduates for MAERB Annual Report Form reporting. Employers are identified through the Graduate Survey (see Appendix H) and communication with the program director if the graduate was not employed at the time of the initial survey. The Employer Survey (see Appendix I) is sent to employers who hired graduates from the previous calendar year. Questions related to employer satisfaction of educational

preparation involve a 5-point Likert scale. Employers may provide additional feedback in short-answer fields. The survey is administered by the college's institutional research department via Qualtrics. Employers receive an email, generated by Qualtrics, each January (see Appendix L). The employer survey may be administered 3–12 months after the graduate becomes employed (MAERB, 2019c). Table 2 illustrates the results of the MAERB Employer Survey, including total graduates employed for each year, survey administration dates, number of completed surveys, and participation rate.

Table 2

MAERB Employer Survey

Variable	2014	2019
Total graduates employed	22	25
Survey administration date	Jan 2015	Jan 2020
Completed surveys	13	15
Participation rate	59%	60%

Note. The total number of employed graduates is assessed in January following graduation. All employers employing graduates of the previous calendar year receive surveys.

The medical assistant program director tracks the data collected using an Excel tracking tool (see Appendix K). Central State Technical College completes dashboard reporting for completion of the MAERB Annual Report Form (see Appendix B) annually in March. The program director reports data related to enrollment, retention, and graduation rates; graduate satisfaction; employment rates; employer satisfaction; and exam pass rates. Before submission, the data are reviewed for completeness and accuracy. When no employment is tracked, the

program director communicates with the graduate to determine if the graduate has gained employment since the initial survey. The program director may collect data through email or telephone.

When data collection of employment information is complete, graduates who are positively employed as medical assistants or in a related field are reported on the MAERB Annual Report Form. The MAERB (2020b) defines positive placement as employment in a medically related setting in which clinical and administrative competencies are used. The data are retained for the subsequent accreditation report through the MAERB Annual Report Form. The MAERB provides direction regarding the retention of raw data, noting the program director's responsibility to retain a minimum of 5 years of raw data. Central State Technical College maintains compliance with the standard. Data are maintained by the college's institutional research department and stored electronically in the Qualtrics repository.

The survey responses were evaluated for completeness to reduce the risk of bias caused by respondent error due to incomplete data (McNabb, 2014). Any incomplete surveys were not included in the respondent data. All viable data were tracked using Excel for preparation into SPSS (Version 28). The spreadsheet included five columns: student number, treatment or control group, employment or positive placement, employer satisfaction of affective domain, and overall employer satisfaction. Student names were omitted, and a numeric code was assigned to each student to ensure confidentiality.

The employment column included a yes/no indicator field. Employment data were validated in Excel by allowing either 0 (unemployed) or 1 (employed at the time of the survey). Employer satisfaction scores for Q4–Q12 of the MAERB Employer Survey (2009) were built with corresponding Likert-scale ratings.

The creation of the data set was monitored to ensure accurate data entry with the use of Excel tools and to ensure each value is linked to the correct variable and case (McGrath, 2015). The Excel data file was created using the Data Validation tool to allow only whole numbers between 0 and 5 in the cells, which were used to document survey questions with a corresponding Likert scale. The "ignore blank" feature was deactivated to prevent missing any data entry. An error alert was generated when any cell was missing or invalid data were entered. Raw data were securely stored electronically on a network-encrypted drive and will be maintained for a period of 3 years, when files will be securely deleted.

Data Analysis

The control group consisted of 2014 graduates. The group did not use service-learning. The control group was individually compared to the dependent variables of employment, employer satisfaction of preparation associated with the affective domain, and overall employer satisfaction with groups completing service-learning. Groups using service-learning included the graduation cohorts from 2019. The Excel data set was subject to the data cleaning process. Additional analysis was conducted to detect any potential errors, undetected by the Excel Data Validation tool, which may require correction. Data were analyzed to search for any missing values and were corrected. Excel functions for sorting and scanning were used to search for duplication of any student records through analysis of the assigned numeric code. Any duplicate code data were cross-referenced with the raw data provided to ensure correct values are reported on the appropriate worksheet (Allen, 2017). Incomplete survey data were omitted from the study.

When the data set was deemed complete and accurate, the data were entered into SPSS (Version 28) for analysis using independent *t* tests. The analysis of employment rates involved a between-subject design, with two independent variable groups (treatment vs. control). The

dependent variable data were dichotomous, relative to employment rates. A binomial value was assigned to employed/positive placement (1) and not employed/no positive placement (0).

The independent *t* test was appropriately used to determine a statistically significant difference in the means of two independent samples for employer satisfaction of affective domain and overall employer satisfaction (Nishishiba et al., 2014). The graduating cohorts using service-learning served as an independent sample when compared to the control group that did not use service-learning. An algorithm to determine the most appropriate test for use of SPSS (Version 28) was applied to confirm test selection. When there is one outcome variable with two categorical predictors and different participants, Field (2009) suggested the use of independent *t* tests. Employment status and each survey question represented an outcome variable of the categorical predictor of service-learning.

A minimum of three statistical assumptions must be met prior to data collection to ensure the use of independent *t* testing is acceptable (Salkind, 2010). The first assumption stipulates a continuous dependent variable with one independent variable and one dependent variable that is measured at the dichotomous level (Laerd Statistics, 2016a). The two categorical values of employed and not employed were present and were measured at the nominal level. The dependent variables of employer satisfaction of affective domain and overall employer satisfaction were measured with a 5-point Likert scale. The dependent variable values can only take on the value that falls within the minimum and maximum scores.

An additional assumption was related to sampling and study design. Purposive sampling methods were used to include graduates who fit specific criteria. The second assumption was related to the independent variable, which was categorical (Laerd Statistics, 2016a). The independent variable was the presence or absence of service-learning. The treatment group used

the intervention of service-learning, and the control group, a nonrandomly selected control group, did not use service-learning. The third assumption was related to the independence of observations (Laerd Statistics, 2016a). The 2019 and 2014 student groups (treatment vs. control) were not concurrently enrolled, and students did not interact with one another.

The fourth assumption of independent *t* tests requires no significant outliers within the groups. A simple boxplot was used to detect any potential outliers. Any potential outliers were removed from the test (Laerd Statistics, 2016a). The fifth assumption of the use of independent *t* testing stipulates the population follows a normal distribution. Recommendations were followed to include the naturally occurring population sample to ensure unbiased sampling (Salkind, 2010). The assumption related to normal distribution was tested using the Shapiro–Wilk test for normality (Laerd Statistics, 2016a). The sixth assumption involved equality of population variance. Individual testing of the control group to each group ensured the ratio of variance did not exceed 4:1 and heterogeneity of variance was not considered a threat to validity (Allen, 2017). Levene's test was used to assess the homogeneity of variance.

Reliability and Validity

Reliability and validity are considered fundamental concerns to ensure the quality of data. *Reliability* is related to the outcome measures, and *validity* is associated with the precision of inferences of the measure (Jordan, 2018). Dependent variables, or outcome measures, were evaluated to determine reliability and validity. Instruments used to collect outcome measure data associated with the dependent variables of employment rates, employer satisfaction of academic preparation of affective domain, and overall employer satisfaction were reviewed to evaluate objectivity. Benefits and disadvantages of the instruments were considered to determine any potential threats to validity and reliability.

Employment rate data were primarily collected through the MAERB Graduate Survey (see Appendix H). The portion of the instrument used for collection of employment data is fill-in-the-blank. Fill-in-the-blank assessments may offer a more authentic construct than other alternatives (Frey, 2018). Frey (2018) recommended a survey be developed to require a fill-in-the-blank response and each response provides one blank per statement.

Frey (2018) suggested the benefits of a fill-in-the-blank assessment are an increase in validity, reduction of subjectivity, and increase in reliability. Potential threats to validity and reliability are associated with the analysis of the response data. Fill-in-the-blank instruments require hand scoring or the use of a software application to evaluate the responses. Fill-in-the-blank assessments require more time to complete, potentially reducing the participation rate (Frey, 2018).

The rubrics and corresponding Likert-scale ratings present within the MAERB surveys are descriptive systems, based on a scoring matrix, which enables the assignment of a numeric value to the established criteria associated with employer satisfaction. The use of rubrics provides an opportunity to develop a more objective assessment for an evaluation, which is frequently more subjective in nature (Salkind, 2010). The MAERB survey instruments ensure the evaluator applies the performance criteria in a fashion that displays objectivity and consistency. The employer evaluators are provided direction and a detailed description of the numeric rating to ensure the tool is used consistently for evaluation and scoring of criteria (Salkind, 2010). Recipients of both surveys receive consistent email correspondence (see Appendix L).

The Likert-scale model used in the MAERB survey instruments may contribute to potential issues associated with the reliability of the tool. Recommendations for scoring suggest the scale include an odd number to create a neutral midpoint response (Allen, 2017). An

evaluation of the survey instruments yields development with an odd number of response criteria. The survey does not require respondents to answer with either a negative or a favorable response. The MAERB survey instruments may not be subject to the concern related to reliability. A neutral midpoint response is indicated in the detailed instructions. A rating of 3 is identified as neutral or acceptable (MAERB, 2009, 2019a).

Drew et al. (2008) described *internal validity* as the technical soundness of an investigation, while *external validity* is more associated with generalizability. Research is considered externally valid based on the degree to which the arrangements, procedures, and participants are representative of the outside setting, thereby allowing the results to generalize or transfer. The population sample of graduates and employers was reflective of CAAHEP-accredited medical assistant programs across the nation. National accreditation standards set forth by the MAERB (2017) were developed to promote validity. Graduates followed consistent curricular guidelines, and all employers were representatives from outpatient clinical settings. Data are collected following the MAERB's accreditation standards; the program director completes training on data collection and reporting standards for accreditation (MAERB, 2020a). Before submission, the data are reviewed by a second observer for completeness and accuracy.

Potential threats to internal validity may be associated with the ex post facto design of the study. Salkind (2010) noted the lack of ability to control independent variables and nonrandom selection of the subjects pose concerns associated with validity. Nonrandom selection of subjects may also affect external validity by limiting the possibility of statistical inference. An additional potential threat to internal validity exists due to the absence of a pretest–posttest design, which may be overcome if employer participants have a background with the instrument (Drew et al., 2008).

Ethical Procedures

Ethical procedures rooted in beneficence, respect, justice, truthfulness, accuracy, and completeness are paramount to the research process (Allen, 2017). Measures to maintain ethical practice were maintained and were addressed in the written communication to the college's IRB. Confidentiality was safeguarded through multiple efforts. Central State Technical College is a pseudonym; the pseudonym was approved by the college's IRB. All personal identifiers of employers and graduates contained within the survey instrument were safeguarded and omitted from results reporting. Students were tracked with a unique identifier.

The raw data of Graduate Survey responses, Employer Survey responses, and the Excel tracking tool (see Appendix K) for students graduating in 2014 and 2019 are available by online request to the college's institutional research department. Raw data were securely stored electronically on a network-encrypted drive and will be maintained for a period of 3 years, when files will be securely deleted. The participating college providing historical data of accreditation survey outcomes retained the right to withdraw from the study and were informed participation is voluntary. No punitive repercussions exist for choosing not to participate. The participating college did not receive incentives for participating in the study. Research ethics committees may consider the use of monetary incentives to promote participation in research as coercive (Singer & Couper, 2008).

The Determination of Human Subject Research Form was submitted to the college. A request to forgo the process of informed consent was submitted to Central State Technical College's IRB due to the use of ex post facto data, which did not personally identify any individuals who provided data through MAERB survey completion. The ex post facto design did not allow for any manipulation that would expose human subjects to experimental treatment. The

design provided a framework to investigate cause–effect relationships that occurred naturally in the past without subjecting participants to alternative treatment (Salkind, 2010). The college reviewed the request and Determination of the Human Subject Research Form (see Appendices C & D) following the federal regulation established to protect human subjects, 45 CFR 46.101(b)(2). The college determined no researcher interference and no human interaction existed, and data were anonymized to protect the participants. The study was approved and deemed exempt from IRB review (see Appendices E & M).

Researcher employment as an academic associate dean of Central State Technical College, member of the institution's community engagement cross-functional team, and accreditation site surveyor for the CAAHEP's MAERB presents a potential conflict of interest. Frey (2018) identified potential threats to credibility when internal evaluators are employed with the organization or program being evaluated. Recommended practice to investigate unintended or unanticipated outcomes was used to reduce the risk of potential threats to credibility. No reporting relationship with medical assistant students or medical assisting faculty existed, further reducing the risk of coercion of participation. All available data were included in the study to reduce the potential for selection bias and to limit misuse or misinterpretation of data (Sica, 2006).

Chapter Summary

The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. An ex post facto research design was used to examine events occurring naturally in the past to test hypotheses about a potential cause-and-

effect relationship between the use of service-learning in a medical assistant academic program and accreditation outcome measures. The research design allowed control of the independent variable, service-learning, through statistical analysis of dependent variables associated with accreditation outcome measures (Salkind, 2010).

The methodology for the research was presented to provide details about the problem statement and purpose of the research. Research questions were aligned to the purpose. The questions and hypotheses served as a framework for the research design. The rationale for the research further supported identified needs. The procedures used during the research were introduced to outline the process for thorough data analysis and ethical handling of data. Identification of potential threats to reliability and validity were introduced, along with measures to reduce the risk of potential issues. Findings of the research are presented in Chapter 4.

Chapter 4: Research Findings and Data Analysis Results

The background of this study supports employer demand for noncognitive skills development among medical assistant students. Valued by employers, these skills may promote therapeutic encounters (Brown et al., 2013; Kautz et al., 2017). Additional research conducted by Finch et al. (2013) resulted in the recommendation to address the issue of a noncognitive skills gap during educational preparation, explicitly calling for institutions of higher learning to consider linking outcome measures to the achievement of noncognitive skills. The MAERB revised curricular requirements for CAAHEP-accredited medical assistant programs in 2015, integrating curricular competencies to address noncognitive skills such as critical thinking, communication, professionalism, and the ability to work independently and in team settings. Evidence supports the use of service-learning as a pedagogy to address noncognitive skills development (Passel, 2015; Randolph, 2016).

The problem is graduates of medical assistant programs of Central State Technical College (a pseudonym) are deficient in noncognitive skills such as critical thinking, communication, professionalism, and the ability to work independently and in team settings (Slade, 2014). The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. The following research questions guided the study:

Research Question 1: Is there a statistically significant difference between service-learning participation (treatment vs. control) on employment rates of medical assistant graduates?

Research Question 2: Is there a statistically significant difference between service-learning participation (treatment vs. control) on employer satisfaction of noncognitive skills development in hired medical assistant graduates?

Research Question 3: Is there a statistically significant difference between service-learning participation (treatment vs. control) on overall employer satisfaction of hired medical assistant graduates?

The hypotheses were developed to evaluate the potential effects of the use of the service-learning intervention on the student outcome measures identified in the research questions. An analysis of archival data from Central State Technical College tested the following null and alternative hypotheses:

$H1_0$: No statistically significant difference in employment rates exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H1_a$: A statistically significant difference in employment rates exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H2_0$: No statistically significant difference in mean scores of employer satisfaction of noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H2_a$: A statistically significant difference in mean scores of employer satisfaction of noncognitive skills development exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-

learning.

$H3_0$: No statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

$H3_a$: A statistically significant difference in mean scores of overall employer satisfaction exists between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning.

Major sections of the chapter include details surrounding data collection, the treatment, data analysis and results, reliability and validity, and a summary of the answers to the research questions. Deviations, challenges, and adverse events associated with the data collection are presented. The data analysis provides a detailed statistical analysis of the findings.

Data Collection

The data collection occurred using archival data from Central State Technical College's institutional research department and medical assistant program director. The data collected involved two medical assistant student groups from the 2014 and 2019 graduating cohorts. The control group included students who graduated in 2014 and did not experience the curricular intervention of service-learning. The treatment group included students who graduated in 2019 and experienced the curricular intervention of service-learning.

Dependent variable data collected included employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction. Employment rates derived from unmanipulated results of the MAERB Graduate Survey (see Appendix H), and employer satisfaction rates were obtained from unmanipulated results of the MAERB Employer Survey (see Appendix I). These results were cross-referenced with the Excel tracking tool (see Appendix

K), which is maintained at the program level. The use of the Excel tool ensures each value is linked to the correct variable and case (McGrath, 2015). The data cross-referenced included student name, student ID, year of graduation, date the MAERB Graduate Survey (see Appendix H) was sent and results received, and date the MAERB Employer Survey (see Appendix I) was sent and received. The college's institutional research department provided Microsoft Excel documents exported from the Qualtrics Graduate Survey and Employer Survey results. The medical assistant program director provided the Excel tracking tool.

The 2014 cohorts produced 36 graduates and the 2019 cohorts produced 37 graduates. Consistent with MAERB (2020a) policy, the 2014 graduates were surveyed in the month of graduation. Seventeen graduates were surveyed in June 2014 and 19 graduates were surveyed in January 2015. Twenty-nine 2014 graduates completed the survey, representing an 81% response rate. The 2019 graduates were surveyed the month following their graduation. Seventeen students were surveyed in June 2019, 15 in December 2019, and five in January 2020. Thirty-seven 2019 graduates completed the survey, which represented a 100% response rate. Twenty-two graduates from the 2014 cohorts were identified as employed as medical assistants or in a field related to medical assisting. Twenty-five graduates from the 2019 cohorts were identified as employed as medical assistants or in a field related to medical assisting. The final sample size was 66. Group sizes were 29 graduates from the 2014 cohorts and 37 graduates from the 2019 cohorts.

Employer satisfaction of noncognitive skills development and overall employer satisfaction data derived from the MAERB Employer Survey (see Appendix I) results. All employers identified through the results of the graduate surveys received electronic versions of the MAERB Employer Survey, using Qualtrics, and disseminated through the college's

institutional research department. Twenty-two surveys were sent to employers of the 2014 graduating cohorts in January 2015. Twenty-five surveys were sent to the 2019 graduating cohorts in January 2020. MAERB (2020a) policy stipulates dissemination of the survey 3–12 months after the date of employment. Thirteen employer surveys were completed using Qualtrics for the 2014 graduating cohorts, which represented a 59% participation rate. Thirteen employer surveys were completed using Qualtrics for the 2019 graduating cohorts, which represented a 52% participation rate.

A comparison of the Excel tracking tool maintained by the program director was consistent with the Qualtrics data for graduate survey results provided by the college's institutional research department. There was a discrepancy in the Qualtrics employer survey data provided by the college's institutional research department and the employer survey data tracked by the program director with the Excel tracking tool. Additional data was noted on the Excel tracking tool that was not included in the Qualtrics report. This discrepancy was clarified through discussion with the Program director and supported by appropriate data collection practices set forth within MAERB policy that stipulates the Graduate and Employer Surveys must contain the exact questions, Likert scale, and domains as indicated on the survey templates. The policy does not stipulate the dissemination protocol (MAERB, 2020a). The program director verified alternative survey collection methods that included in-person collection techniques.

There was no deviation from the data collection plan to include only complete survey responses collected electronically with Qualtrics. The decision to omit partial records or those collected through alternative means was made to reduce the risk of bias as recommended by McNabb (2014). There was a deviation from the sample size and the number of data sets through the Employer Survey results was reduced to maintain integrity with data collection procedures.

Thirteen employer surveys were completed for the 2014 graduates. Fifteen employer surveys were completed for the 2019 graduates. Two surveys were omitted due to established data collection plans; one survey was completed through an in-person interview and one survey was omitted due to incomplete responses (see Table 3). Thirteen surveys were used for each group.

Table 3

MAERB Employer Survey Data Omissions

Variable	2014	2019
Total employers surveyed	22	25
Survey administration date	Jan 2015	Jan 2020
Completed surveys	13	15
Survey response rate	59%	60%
Omitted survey responses	0	2

Intervention Fidelity

Maintaining treatment integrity is a critical aspect to ensure the intervention of service-learning was implemented as intended and was administered consistently and accurately (Frey, 2018). The service-learning intervention was administered as planned. Graduating students of the treatment group completed the curricular requirement related to experiential learning. The control group, consisting of the 2014 graduating cohorts, and the treatment group, consisting of the 2019 graduating cohorts, completed a 160-hour clinical practicum. The treatment group also completed 40 hours of additional experiential learning through service-learning. The intervention was administered as planned. No challenges or adverse events related to the intervention were encountered.

The fidelity of the intervention was established through performance assessment directions and grading rationale. Students were required to adhere to guidelines to ensure the service-learning activities completed by the students aligned with program coursework. The setting and nature of the service-learning activities were preapproved by the medical assistant practicum coordinator, logged by the student, and signed off by the sponsoring agency. Students participating in the service-learning experience were required to complete a reflection to evaluate how the experience provided preparation for the clinical site placement and how the experience prepared the student to achieve career goals (see Appendix J).

Frey (2018) recommended the analysis of student products to include a rubric for enhanced fidelity of the intervention. The rubric included the presence of each required component and employed a Likert-type scale. Students were consistently assessed and were provided with a rubric to ensure all required components of the intervention were met. Additional standards were set forth within the grading rationale. Students were required to complete all performance assessment tasks with a score of 76% or better to pass the course.

Data Analysis

Descriptive statistics were used for the analysis of the data samples to infer research findings. Three data sets were used. All data sets included the presence or absence of service-learning. The first data set contained the employment rates of 73 students (see Table 4) and was related to Research Question 1. Employment rates were obtained through the MAERB Graduate Survey (see Appendix H). Graduates respond to the questions related to employment. The program director verifies employment, continuing education, or military service and tracks the data on the Excel tracking tool (see Appendix K).

Table 4

Employment Rates

Student graduates	*n*	Positive employment	Employment rate
Control group 2014 cohorts	36	22	61.11%
Treatment group 2019 cohorts	37	25	67.56%

The second data set contained employer satisfaction of noncognitive skills development of 26 students. The dependent variable in Research Question 2 was employer satisfaction of noncognitive skills development and was related to employer satisfaction of the affective domain. Data derived from Q4–Q11 of the MAERB Employer Survey (see Appendix I). Noncognitive skills evaluated included judgement, communication, ethics, professionalism, effectiveness, ability to accept supervision, self-direction, responsibility, punctuality, and positive contribution (see Table 5).

Thirteen employer surveys were completed for the 2014 graduates. Fifteen employer surveys were completed for the 2019 graduates. Two surveys were omitted due to established data collection plans; one survey was completed through an in-person interview and one survey was omitted due to incomplete responses (see Table 3). Thirteen surveys were used for each group.

Table 5

Samples of Mean Employer Satisfaction of Noncognitive Skills Development of 2014 Control Group Versus 2019 Treatment Group

Question	Group	*n*	*M*	*SD*	*SEM*
Q4 Uses good judgment	Control	13	4.77	.599	.166
	Treatment	13	4.54	.519	.144
Q5 Communicates effectively	Control	13	4.54	.660	.183
	Treatment	13	4.38	.650	.180
Q6 Ethical and professional manner	Control	13	4.85	.650	.180
	Treatment	13	4.38	.506	.140
Q7 Functions effectively in health-care team	Control	13	4.85	.376	.104
	Treatment	13	4.62	.506	.104
Q8 Accepts supervision	Control	13	4.84	.376	.104
	Treatment	13	4.69	.480	.133
Q9 Self-directed and responsible	Control	13	4.62	.768	.213
	Treatment	13	4.54	.519	.144
Q10 Arrives on time and prepared	Control	13	4.77	.599	.166
	Treatment	13	4.69	.480	.133
Q11 Contributes to positive environment	Control	13	4.77	.439	.122
	Treatment	13	4.62	.506	.140

The dependent variable in Research Question 3 was overall employer satisfaction. Data to address the dependent variables associated with Research Questions 2 and 3 were obtained through the MAERB Employer Survey (see Appendix I). Overall employer satisfaction of each student derived from the score of Q12 of the MAERB Employer Survey.

Thirteen employer surveys were completed for the 2014 graduates. Fifteen employer surveys were completed for the 2019 graduates. Two surveys were omitted due to established

data collection plans; one survey was completed through an in-person interview and one survey was omitted due to incomplete responses (see Table 3). Thirteen surveys were used for each group. The third data set contained the overall employer satisfaction of 26 students (see Table 6).

Table 6

Samples of Mean Overall Employer Satisfaction

Student graduates	*N*	*M*	*SD*	*SEM*
Control group 2014 cohorts	13	4.62	.768	.213
Treatment group 2019 cohorts	13	4.62	.506	.140

All research studies possess certain assumptions, limitations, and delimitations (Fraenkel et al., 2012). Research Question 1 evaluated a potential statistically significant difference in employment rates between the treatment group using the intervention of service-learning and the control group, a nonrandomly selected control group, not using service-learning. Employment rates were measured at the nominal level, and the chi-square test of homogeneity was evaluated for use. Five assumptions were considered. Four of the five assumptions were met. The assumption requiring the data set to have one independent variable that has three or more categorical, independent groups was violated, and Fisher's exact test was deemed appropriate.

The test of two proportions was used to determine whether a difference exists between the binomial proportions of two independent groups on a dichotomous dependent variable (Laerd Statistics, 2016b). All assumptions of Fisher's exact test were met. The first assumption of this test of two proportions required the presence of one independent variable measured at the dichotomous level. The independent variable was the absence or presence of service-learning,

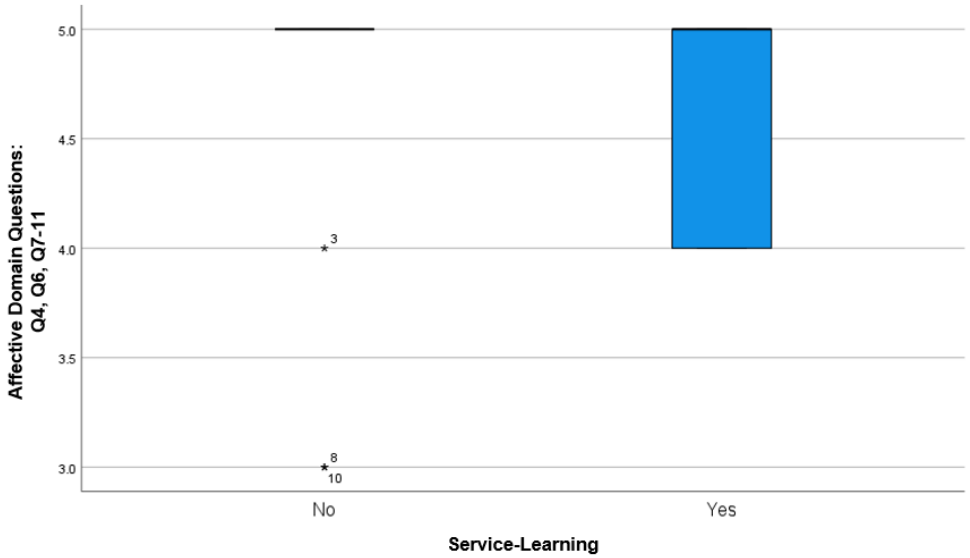
and the dependent variable was the absence or presence of employment status. The second assumption required independence of observations. The 2019 and 2014 student groups (treatment vs. control) were not concurrently enrolled, and students did not interact with one another. The third assumption was related to sampling and study design. Purposive sampling methods were used. The fourth assumption required a sufficient sample size so normal approximation to the binomial distribution is valid. The minimum sample size of six was met (Laerd Statistics, 2016b).

Independent *t* tests were selected to evaluate Research Questions 2 and 3. The first assumption was the test has one dependent variable that is measured at the continuous level. Dependent variable data of employer satisfaction of noncognitive skills development and overall employer satisfaction were measured at the continuous level on a 5-point Likert scale. The second assumption required each data set have one independent variable consisting of two categorical, independent groups. Independent variable data included the presence or absence of service-learning. The control group consisted of 2014 graduates and did not use the intervention of service-learning. The treatment group consisted of 2019 graduates and used the intervention of service-learning. The third assumption was related to the independence of observations. The 2019 and 2014 student groups (treatment vs. control) were not concurrently enrolled, and students did not interact with one another.

Three additional tests of assumption were conducted using SPSS (Version 28) to evaluate the final three assumptions correlated to independent *t* tests. The data sets were first tested for evaluation of the fourth assumption about outliers. Outliers were identified, as assessed by inspection of boxplots. Outliers and extreme outliers were identified in all data sets (see Figure 2), except for Q5 Communicates effectively (see Figure 3).

Figure 2

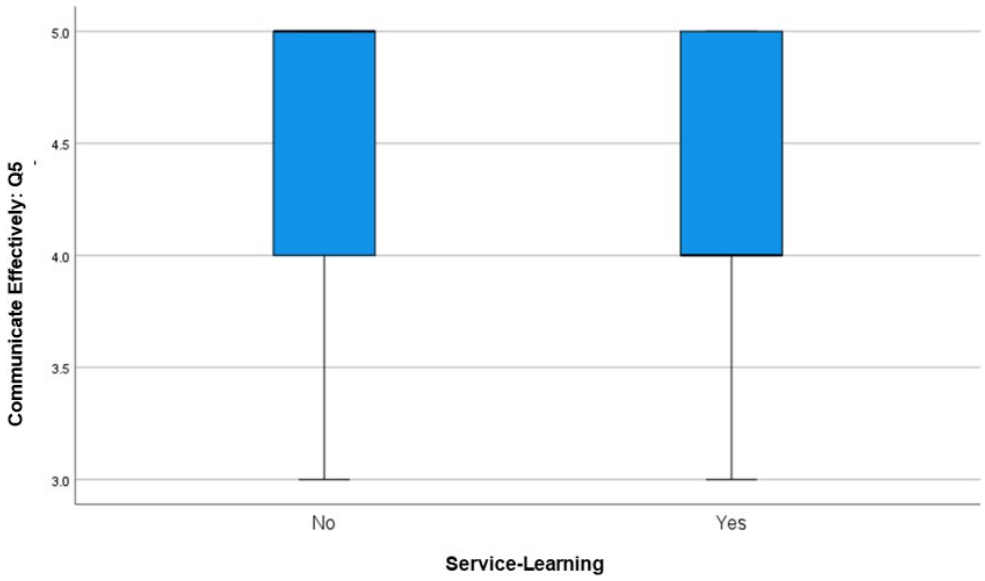
Boxplot Demonstrating Outliers (Q4, Q6, Q7-Q11)



Note. Outliers are identified as a value more than 1.5 box lengths from the edge. SPSS (Version 28) categorized extreme outliers with the asterisk (*).

Figure 3

Boxplot Demonstrating No Outliers (Q5)



The data were reviewed to identify potential data entry or measurement errors. No errors were noted. A decision to include the outliers in the analysis was determined on evaluation of whether the outlier placed a considerable effect on the data analysis by running the test with and without the outliers (Laerd Statistics, 2016a). A similar conclusion arose whether the outliers were included or omitted.

Assumption testing for homogeneity of variance was conducted with SPSS (Version 28) using Levene's test for equality of variances. The population variance of both groups was considered equal, with a return *p* value greater than .05 (Laerd Statistics, 2016a). Homogeneity of variances existed for the data sets, as assessed by Levene's test for equality of variances (see Table 7).

Table 7

Test of Homogeneity of Variances

Question	Levene Statistic	df1	df2	Sig.
Q4 Uses good judgment	.755	1	24	.394
Q5 Communicates effectively	.000	1	24	1.000
Q6 Ethical and professional manner	7.261	1	24	.013
Q8 Accepts supervision	3.508	1	24	.073
Q9 Self-directed and responsible	.550	1	24	.466
Q10 Arrives on time and prepared	.072	1	24	.791
Q11 Contributes to positive environment	2.623	1	24	.118

The assumption related to the use of normally distributed data was tested using the Shapiro–Wilk test for normality. The Shapiro–Wilk test for normality is the recommended test to evaluate this assumption and is suggested for use in studies with small sample sizes, fewer than 50 participants (Laerd Statistics, 2016a). The tests of normality indicated a significance level for all questions less than .001. The scores were not normally distributed, as assessed by the Shapiro–Wilk test ($p < .05$). An evaluation of the violation and options to conduct a nonparametric test or to run the independent *t* test followed.

Three options were evaluated. The first option involved transforming the dependent variable. Issues associated with this option were identified. The first issue was related to difficulty interpreting transformed data that do not represent the original values (Laerd Statistics, 2016a). The dependent variable data were based on results collected through the MAERB Employer Survey results. MAERB (2020a) policy stipulates the survey must adhere to the questions and the Likert scale authorized by the MAERB.

The violations of assumptions prompted further evaluation of appropriate options, including modifying outliers by replacing them with less extreme values, transforming the dependent variable, or continued inclusion of the outliers. These options were not deemed appropriate; thus, a decision was made to modify testing procedures. The Mann–Whitney *U* nonparametric test was evaluated for appropriateness. The Mann–Whitney *U* test is considered the appropriate nonparametric alternative to the independent-samples *t* test when data sets fail to meet the required assumptions. The three assumptions of the Mann–Whitney *U* test were met. The data sets represented a continuous or ordinal dependent variable, the independent variable was categorical with two groups, and independence of observations existed (Laerd Statistics, 2016a).

Results

Research Question 1: Is there a statistically significant difference between service-learning participation on employment rates of medical assistant graduates? The first data set was used for testing. The sample of this data set was 73 and included 36 graduates of the 2014 cohort and 37 graduates of the 2019 cohort.

SPSS (Version 28) was used to conduct Fisher's exact test for the evaluation of employment rates between groups that used service-learning and groups that did not use service-learning. Cross-tabulation of the employment data of the 73 graduates found increased employment rates when the intervention of service-learning was used. The employment rate of the 2014 graduates who did not use service-learning was 61.1%, while the employment rate of the 2019 graduates who used service-learning was 67.6% (see Table 8).

Table 8

Use of Service-Learning and Employment Cross-Tabulation

			Employed		Total
			No	Yes	
Use of service-learning	No	Count	14	22	36
	% within use of service-learning		38.9%	61.1%	100.0%
	% within employed		51.9%	47.8%	49.3%
	Yes	Count	12	25	37
	% within use of service-learning		32.4%	67.6%	100.0%
	% within employed		46.2%	53.2%	50.7%
Total		Count	26	47	73
	% within use of service-learning		35.6%	64.4%	100.0%
	% within employed		100.0%	100.0%	100.0%

Although an increase was noted, there was no statistically significant difference between employment rates and the use of service-learning, as assessed by Fisher's exact test, $p = .630$ (see Table 9). Findings demonstrated no association between the two variables. Therefore, the null hypothesis cannot be rejected, nor can the alternative hypothesis be accepted. Alternative testing options were evaluated.

Table 9

Chi-Square Tests

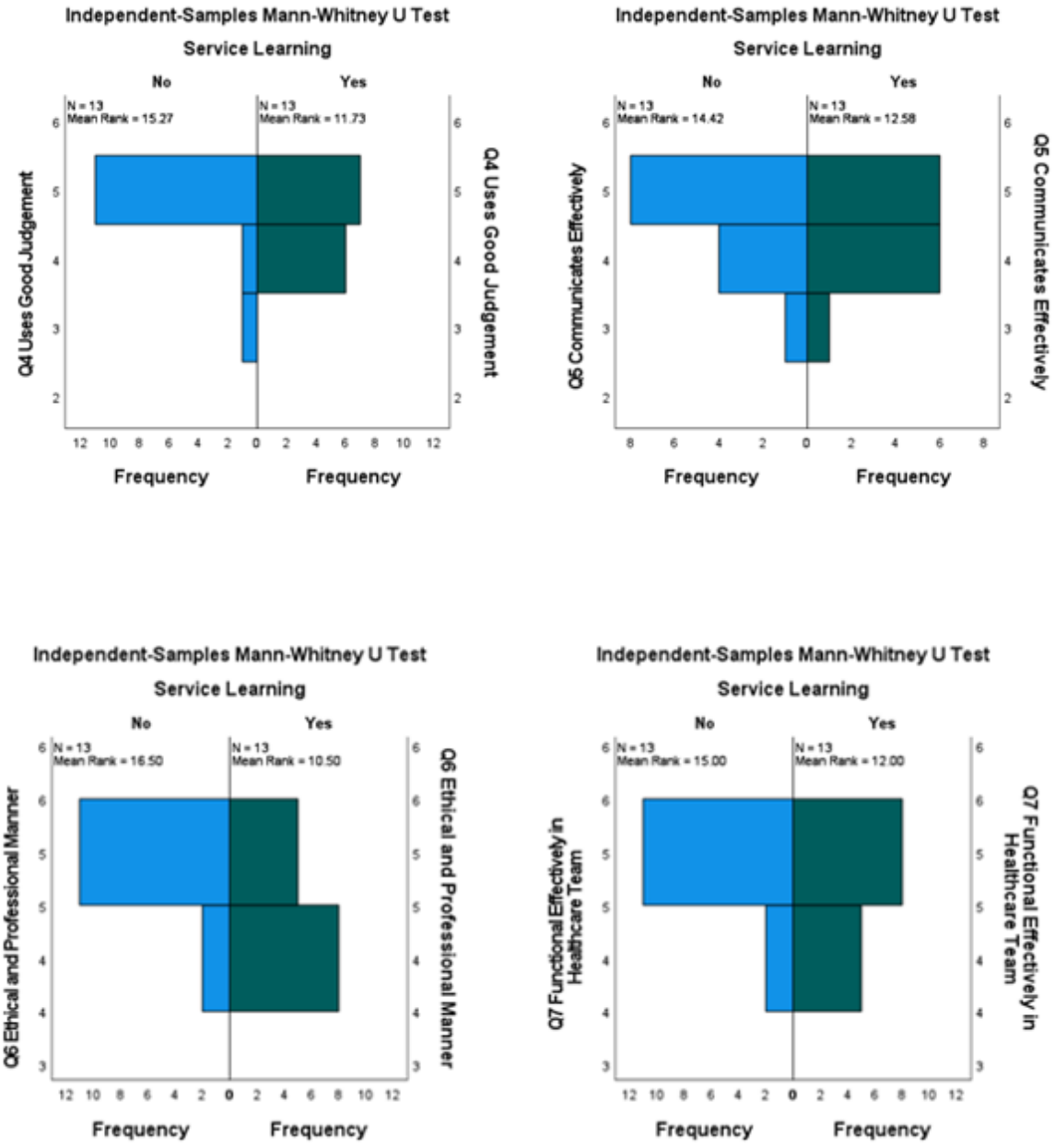
Test	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson χ^2	.332*	1	.565		
Continuity correction	.110	1	.740		
Likelihood ratio	.332	1	.565		
Fisher's exact test				.630	.370
Linear-by-linear association	.327	1	.567		
N valid cases	73				

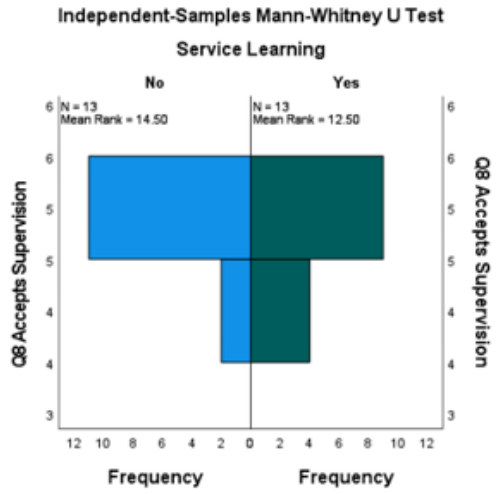
*The Pearson chi-square test could not be evaluated. Zero cells had the expected count of less than 5. The minimum expected count was 12.82.

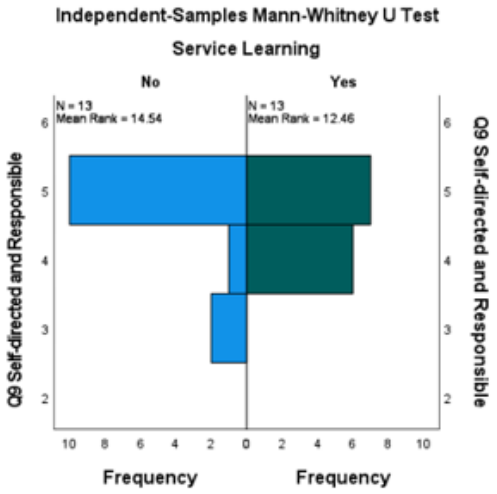
The Mann–Whitney *U* test was selected to test the data sets associated with Research Questions 2 and 3. Population pyramid histograms were generated for each test to determine whether the shape of distribution was similar in each test (see Figure 4). A visual inspection deemed the test an appropriate selection for inferential evaluation of differences in median scores between the control group that did not use service-learning and the treatment group that used service-learning.

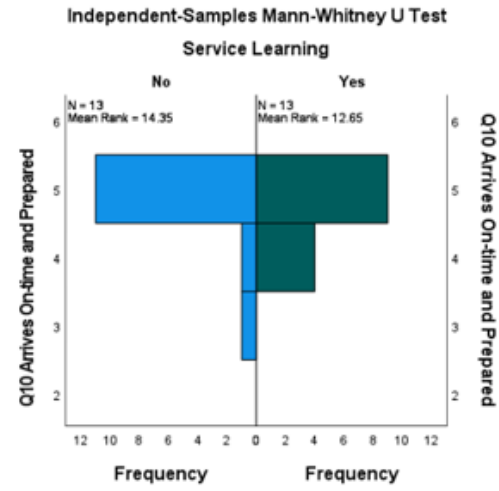
Figure 4

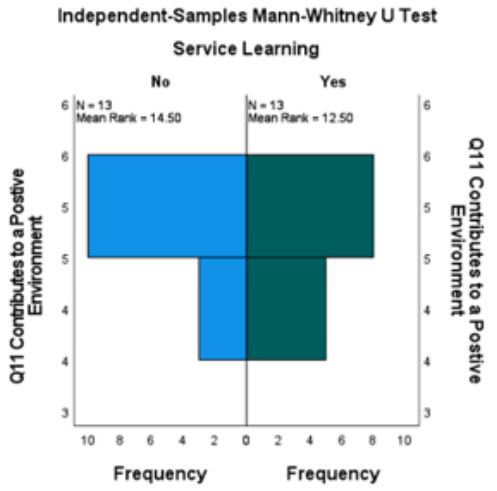
Population Pyramid Histograms for Evaluation of Mann–Whitney U *Testing*

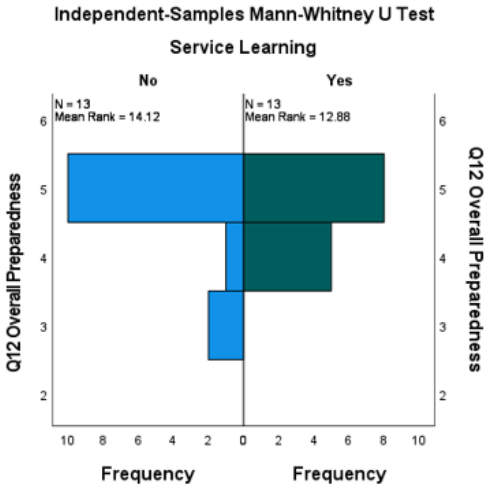



Independent-Samples Mann-Whitney U Test
Service Learning
No
Yes
N = 13
Mean Rank = 14.50
N = 13
Mean Rank = 12.50
Q8 Accepts Supervision
Q8 Accepts Supervision
Frequency
Frequency


Independent-Samples Mann-Whitney U Test
Service Learning
No
Yes
N = 13
Mean Rank = 14.54
N = 13
Mean Rank = 12.46
Q9 Self-directed and Responsible
Q9 Self-directed and Responsible
Frequency
Frequency


Independent-Samples Mann-Whitney U Test
Service Learning
No
Yes
N = 13
Mean Rank = 14.35
N = 13
Mean Rank = 12.65
Q10 Arrives On-time and Prepared
Q10 Arrives On-time and Prepared
Frequency
Frequency


Independent-Samples Mann-Whitney U Test
Service Learning
No
Yes
N = 13
Mean Rank = 14.50
N = 13
Mean Rank = 12.50
Q11 Contributes to a Postive Environment
Q11 Contributes to a Postive Environment
Frequency
Frequency


Independent-Samples Mann-Whitney U Test
Service Learning
No
Yes
N = 13
Mean Rank = 14.12
N = 13
Mean Rank = 12.88
Q12 Overall Preparedness
Q12 Overall Preparedness
Frequency
Frequency

Research Question 2: Is there a statistically significant difference between service-learning participation on employer satisfaction of noncognitive skills development in hired medical assistant graduates? The second data set was used for testing. The sample of this data set was 26 and included 13 graduates of the 2014 cohort and 13 graduates of the 2019 cohort.

Using a .05 significance level, Mann–Whitney *U* tests were run to determine if differences existed in noncognitive skills development, as demonstrated through Q4–Q11, between students who used service-learning (treatment group) and students who did not use service-learning (control group). A Mann–Whitney *U* test was also used to determine if a statistically significant difference in overall employer satisfaction existed, as demonstrated through Q12, between students who used service-learning and students who did not use service-learning. Employer Survey response scores associated with each question were not statistically significantly different between the treatment group and the control group. The distribution of Q4–Q11 across both categories of service-learning did not produce statistically significant results (see Table 10).

Table 10

Independent Mann–Whitney U *Tests: Employer Satisfaction of Noncognitive Skills Development*

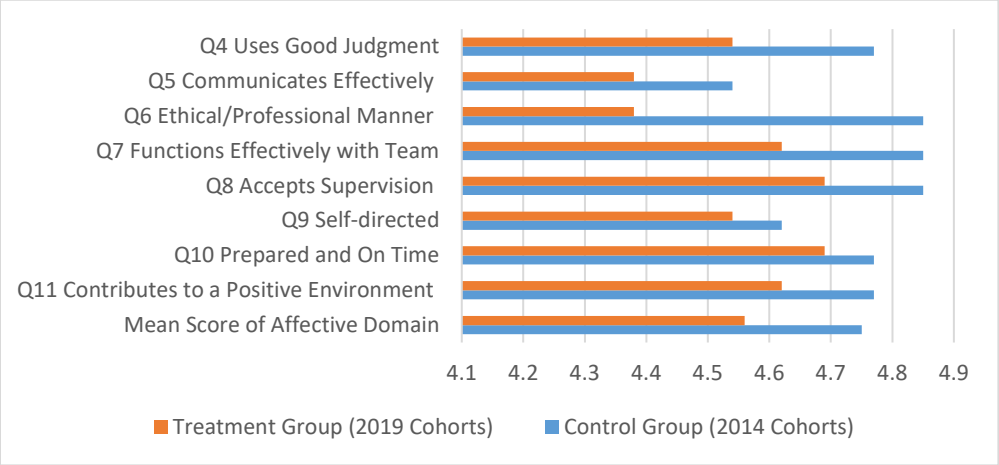
Question	*N*	Mean rank	Mann–Whitney *U*	Standardized test statistic	Asymp. sig. (2-sided)
Q4 Uses good judgment	26	Treatment: 11.73 Control: 15.27	61.5	-1.463	0.143
Q5 Communicates effectively	26	Treatment: 12.58 Control: 14.42	72.5	-0.693	0.488
Q6 Ethical and professional manner	26	Treatment: 10.50 Control: 16.50	45.4	-2.372	0.018

Question	*N*	Mean rank	Mann–Whitney *U*	Standardized test statistic	Asymp. sig. (2-sided)
Q7 Functions effectively in health-care team	26	Treatment: 12.00 Control: 15.00	65.0	-1.301	0.193
Q8 Accepts supervision	26	Treatment: 12.50 Control: 14.50	71.5	-0.913	0.361
Q9 Self-directed and responsible	26	Treatment: 12.46 Control: 14.54	71.0	-0.827	0.408
Q10 Arrives on time and prepared	26	Treatment: 12.65 Control: 14.35	73.5	-0.769	0.442
Q11 Contributes to positive environment	26	Treatment: 12.50 Control: 14.50	71.5	-0.833	0.405

A statistically significant difference existed in Q6. All other scores of noncognitive skills development between the control group and treatment group did not demonstrate a statistically significant different, with the treatment group demonstrating lower scores in Q4–Q11. Therefore, the null hypothesis failed to be rejected. The treatment group consistently demonstrated lower mean scores in all categories associated with noncognitive skills development (see Figure 5).

Figure 5

Employer Survey Results: Affective Domain



Research Question 3: Is there a statistically significant difference between service-learning participation on overall employer satisfaction of hired medical assistant graduates? The third data set was used for testing. The sample of this data set was 26 and included 13 graduates of the 2014 cohort and 13 graduates of the 2019 cohort.

Overall employer satisfaction was measured with Q12. The distribution of Q12 across both categories of service-learning did not produce statistically significant results (see Table 11). There was no statistically significant difference: therefore, the null hypothesis failed to be rejected.

Table 11

Independent Mann–Whitney U *Tests: Overall Employer Satisfaction*

Question	*N*	Mean rank	Mann–Whitney *U*	Standardized test statistic	Asymp. sig. (2-sided)
Q12 Overall employer satisfaction	26	Treatment: 12.88 Control: 14.12	76.5	-0.506	0.613

Reliability and Validity

Potential threats to internal validity may be associated with the ex post facto design of the study. Salkind (2010) noted the lack of ability to control independent variables and nonrandom selection of the subjects pose concerns associated with validity. Nonrandom selection of subjects may also affect external validity by limiting the possibility of statistical inference. Although these potential threats were identified, the threats were overcome because there was no control over the variable.

All data were provided by the college's institutional research department. Employees of the department uphold standards set forth by the college's IRB and are trained on data collection and reporting procedures. The data were also cross-referenced with data collected by the program director. Data were collected following the MAERB's (2020a) accreditation standards; the program director completes training on data collection and reporting standards for accreditation. Data sets were evaluated to ensure consistency with the research design. A decision to omit partial records or records collected through alternative means was made to reduce the risk of bias (McNabb, 2014).

Drew et al. (2008) described internal validity as the technical soundness of an investigation, while external validity is more associated with generalizability. Research is considered externally valid to the degree to which the arrangements, procedures, and participants are representative of the outside setting, thereby allowing the results to generalize or transfer. The population sample of graduates and employers was verified to ensure each was reflective of CAAHEP-accredited medical assistant programs. National accreditation standards set forth by the MAERB (2017) were developed to promote validity. Graduates followed consistent curricular guidelines, and all employers were representatives from outpatient clinical settings.

The survey instrument was evaluated to address potential issues associated with reliability. The Likert-scale model used in the MAERB surveys may contribute to potential issues associated with the reliability of the tools. Recommendations for scoring suggest the scale should include an odd number to create a neutral midpoint response (Allen, 2017). An evaluation of the survey instruments yielded development with an odd number of response criteria. The MAERB survey instrument was not found to be subject to the concern related to reliability. A neutral midpoint response is indicated in the detailed instructions. A rating of 3 is identified as neutral or acceptable (MAERB, 2009, 2019a).

Chapter Summary

The study sample consisted of 36 medical assistant students who completed program requirements in 2014 without the use of service-learning and 37 students who completed program requirements in 2019 with the use of service-learning. Survey data from 13 students in each group were used to develop inferences associated with the research questions. Data analysis of graduates who were exposed to the service-learning intervention did not reveal statistically significant differences in employment rates (see Table 8), although an increase in employment rates was noted from the 2014 cohorts (control) to the 2019 cohorts (treatment). Seven of the eight questions associated with employer satisfaction of noncognitive skills development did not reveal statistically significant differences (see Table 9). One question associated with employer satisfaction of noncognitive skills development assessed employers' satisfaction related to students' ethical and professional behavior. A statistically significant difference between the treatment and control groups was noted; however, the score decreased after the intervention of service-learning was used.

Mean scores of noncognitive skills development-related questions indicated reduced

employer satisfaction of noncognitive skills development from the control group to the treatment group (see Figure 5). Overall employer satisfaction scores (see Table 11) were equal between the treatment and control groups and did not reveal any statistically significant differences. Findings, interpretations, conclusions, limitations, recommendations, and implications for the use of service-learning are presented in Chapter 5.

Chapter 5: Discussion and Conclusion

Students preparing for careers in the medical assistant profession are assessed on educational competencies in the cognitive, psychomotor, and affective domains. The affective domain is linked to noncognitive skills, which are valued by employers and used in health-care settings to promote therapeutic patient encounters. Employers express concern about a noncognitive skills gap and look to educational programs to address the problem.

The methods used to introduce and assess the competencies may vary among educational programs. A medical assistant program in Central State Technical College (a pseudonym) created a service-learning assessment to assess the affective domain and to prepare students for employment. The purpose of this quantitative ex post facto study was to test for statistically significant differences in employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of medical assistant graduates between service-learning participants and non-service-learning participants. The research questions were used to evaluate the use of the service-learning treatment on program outcomes associated with employment rates, noncognitive skills development, and overall employer satisfaction of hired graduates.

The results of the research questions disconfirm a statistically significant difference between service-learning participation (treatment vs. control) on the employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of hired medical assistant graduates. The study contributes to service-learning literature and provides considerations for medical assistant programs that wish to explore the use of service-learning as an assessment intervention.

Major sections of the chapter include details surrounding findings, interpretations, and

conclusions of the research. The study limitations are addressed. Recommendations and implications for leadership are identified.

Findings, Interpretations, and Conclusions

The findings of the data analysis demonstrated an increase in employment rates when service-learning was linked to the curriculum, but the results of the data analysis did not confirm the use of service-learning as having a statistically significant effect on employment rates (see Table 8). The findings showed a decrease in the scores of noncognitive skills development and no change in employer satisfaction between the control group and treatment group (see Tables 9 & 10). The results of the study disconfirmed the use of service-learning as a significant intervention to promote noncognitive skills development among medical assistant students and the satisfaction of employers hiring medical assistant graduates. Further evaluation of research and themes identified in Chapter 2 are interpreted in comparison to the findings of the study.

Findings Linked to Literature

The literature presented in Chapter 2 reflected topics related to the noncognitive skills gap, service-learning as a form of experiential learning, the use of service-learning to develop noncognitive skills, instruments to assess the efficacy of service-learning, and gaps in the literature. Chikeleze et al. (2018) cited communication and critical thinking skills as two desirable attributes for new college graduates beginning a job search. Additional research in the literature review presented evidence that college graduates are lacking noncognitive skills, a concern that may be accentuated in the health-care industry where employees are exposed to constant changes and expected to provide professional, culturally competent health care (Brock et al., 2019; Tulgan, 2016).

The employer response data collected through the MAERB instrument demonstrated

continued satisfaction, with mean scores of responses falling within the 4-point range of a 5-point Likert scale. A score of 4 indicates agreement or satisfaction with statements assessing overall satisfaction and satisfaction of noncognitive skills development (see Appendix I). The decrease in employer satisfaction of noncognitive skills development and statistically significant decrease of employers' satisfaction related to students' ethical and professional behavior may suggest employers are concerned, although they may report a fair level of satisfaction.

The findings of the study did not confirm the use of service-learning to promote noncognitive skills development, but the research addressed previously identified gaps in the literature review that were associated with the use of service-learning in medical assistant education (Bringle et al., 2016; Patil et al., 2020; Randolph, 2016; Tokke, 2017). The research extended knowledge in the discipline of medical assistant educational programs and responded to the implications of past research. Consistent themes emerged that called for the continued focus on noncognitive skills programming in the medical assistant classroom, noted gaps in research associated with service-learning at the program level, and made recommendations to link outcome measures for achievement of noncognitive skills (Bringle et al., 2016; Finch et al., 2013; Patil et al., 2020; Randolph, 2016).

The literature review also presented practices associated with the use of data collection and analysis. A survey instrument was used to assess student perceptions of short- and long-term noncognitive outcomes such as career goals and confidence levels in multiple studies. The survey instruments evaluated through the literature review were administered in a pretest–posttest design. The pretest–posttest design was identified as an assessment measure in other studies evaluated during the literature review (Aldridge et al., 2015; Romsa et al., 2017). Ma et al. (2019) considered the evaluation tool a common and useful method of programmatic

assessment.

Concern regarding limitations of evaluation tools used for the assessment of the efficacy of experiential learning models was addressed through previous research that identified limitations with the use of similar survey instruments (Dabke, 2017; Servey & Wyrick, 2018). Consistent with the findings of the present research, Servey and Wyrick (2018) identified conflicting outcomes of participant feedback. Dabke (2017) also noted issues with limited feedback and response rates. Service-learning was deemed an effective form of experiential learning in the literature, but, like past studies, the findings did not produce the positive response of internships or community-based projects as noted by the perceived effectiveness of experiential learning models (Wolff et al., 2018; Zhang & Blakey, 2012). Additional limitations are discussed in more detail.

Findings Linked to Theoretical Frameworks

A theoretical framework was used as a lens to view the study and was based on Kolb's experiential learning theory, Bandura's self-efficacy theory, and servant leadership theory. A cyclical theoretical framework demonstrates the student experience through service-learning opportunities. The service-learning experience was identified at the center of the framework and was linked to employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction (see Figure 1).

Service-learning is a form of experiential learning, and Kolb's experiential learning theory was noted as the primary framework used to guide the research. The theory draws on the works of notable researchers in learning and human development with an emphasis on a constructivist theory of learning, creating knowledge through experience (A. Kolb & Kolb, 2005). A. Kolb and Kolb (2005) presented a case for the use of experiential learning as a means

to foster the learning of cognitive skills rather than noncognitive skills.

The results did not suggest service-learning fosters the development of noncognitive skills. The findings showed an increase in employment rates, which may demonstrate support of the theoretical framework. Graduates of medical assistant programs may pursue voluntary certification through the completion of one or more recognized credentialing exams. Dierkes et al. (2021) linked voluntary credentials in health-care professions to increased employment rates and opportunities. This concept is transferable to the medical assistant profession due to issues surrounding regulatory requirements, malpractice, managed care guidelines, and more. Employers actively seek applicants who demonstrate knowledge through the attainment of certification (AAMA, n.d.; Balasa, 2018).

An association with Bandura's self-efficacy theory may also demonstrate support for the use of service-learning as a means to increase employment rates. Bumann and Younkin (2012) described individuals with a developed sense of self-efficacy as demonstrating mastery experiences, vicarious experience (social modeling), social persuasion, and physiological response awareness. Self-efficacy theory is grounded in situational learning models that occur outside of the classroom and are embedded within activity and context through placement in a community of practice (Lave & Wenger, 1991).

Case studies of experiential learning models grounded in the theoretical framework presented anticipated benefits, including the social perspective, support from collaboration among peers, and increased levels of confidence among case study subjects (Nieminen & Hytti, 2016). Findings did not produce increased levels of noncognitive skills development; however, confidence level was not assessed in the survey instrument (see Appendix I). Increased confidence is associated with self-efficacy and is identified as an important attribute for the

workplace and instrumental to gaining employment (Kane et al., 2021).

The study was associated with the servant leadership theory and granted consideration to the use of service-learning as a means to develop noncognitive skills and a servant leadership skill set (Greenleaf, 2014). Northouse (2015) asserted leadership development is rooted in self-reflection, an integral component of the service-learning assessment process, and the process of self-reflection provides an opportunity for learners to identify growth and development associated with noncognitive skills. The results did not show an increase in the development of a servant leadership skill set through noncognitive skills development, as demonstrated through responses to questions associated with the affective domain on the MAERB survey (see Appendix I). The service-learning assessment tool required a self-reflection component (see Appendix J). Further research and analysis of student reflection may be warranted to better assess the development of servant leadership and a noncognitive skill set.

Kolb's experiential learning theory, Bandura's self-efficacy theory, the servant leadership theory, and the conceptual framework provided the basis for the understanding of the study. The interpretations, inferences, and conclusions that emerged from the study did not exceed the scope and findings of the research. The conclusions were presented within the boundaries of the study. Bias and personal experiences were addressed. Experience as a medical assistant instructor and program director of a medical assistant program granted accreditation through the CAAHEP, member of the AAMA, and holder of the Certified Medical Assistant credential also contributed to the framework for the research problem and guided development of the research questions. Knowledge of a noncognitive skills gap initially emerged from the noted experiences. The problem of a noncognitive skills gap was confirmed through comprehensive findings of the gap during the literature review.

The findings of the data analysis demonstrated an increase in employment rates when service-learning was linked to the curriculum, but the results of the data analysis did not confirm the use of service-learning as having a statistically significant effect on employment rates. The results also disconfirmed a statistically significant difference between service-learning participation (treatment vs. control) on the employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of hired medical assistant graduates. While the findings did not demonstrate an increase in the development of noncognitive skills, a benefit may be present through an increase in preparedness for employment. A further benefit of the study was demonstrated through contributions to research and literature associated with the topic. The research may be used by medical assistant programs that wish to explore the use of service-learning as an assessment intervention.

Limitations

The limitations identified in Chapter 1 were closely evaluated and considered throughout the research process. Limitations associated with the research design identified potential issues related to evaluator credibility, objectivity, and maturation (Frey, 2018; Salkind, 2010). Limitations associated with external validity were related to the MAERB survey (see Appendix H). Planned research practices rooted in ethical standards were leveraged to mitigate risks associated with the limitations and threats to internal and external validity.

During the research design and methodology development, the COVID-19 pandemic ensued. The pandemic caused time delays due to campus closures and the subsequent disruption of institutional operations. The original plan to leverage multiple colleges within the system would have provided a larger sample size but was challenged after multiple requests were denied from system colleges due to the pandemic. The research design and methodology were modified

to use data from one college with data sets from a control group that did not use the intervention of service-learning and a treatment group that completed service-learning as a requirement of the curriculum. This plan provided the opportunity to test research questions and evaluate the potential effect of participation in service-learning, the independent variable, on dependent variables associated with program outcome data. The dependent variables were employment rate, employer satisfaction of noncognitive skills development, and overall employer satisfaction of hired medical assistant graduates.

The study sample consisted of 36 medical assistant students who completed program requirements in 2014 without the use of service-learning and 37 students who completed program requirements in 2019 with the use of service-learning. The smaller sample sizes of treatment and control groups were further reduced after eliminating incomplete surveys, nonreturned surveys, and surveys that were not collected in an approved manner. Thirteen employer surveys were completed using Qualtrics for the 2014 graduating cohorts, which represented a 59% participation rate. Thirteen employer surveys were completed using Qualtrics for the 2019 graduating cohorts, which represented a 52% participation rate.

The research design met the assumption that only one difference exists between the treatment and control groups. The single difference identified the intervention used and was associated with the absence or presence of service-learning (Allen, 2017). The issue of maturation may have played a role in the results and presented other differences that were not considered. Although an aligned curriculum was delivered, updates to learning activities and faculty staffing changes occurred between the 2014 control group and the 2019 treatment group. Unidentified differences may have been present. Labor market trends associated with the medical assistant profession were not considered. The change in faculty and the delivery of

course competencies may have further contributed to the maturation of curricular content.

Limitations of the findings pointed to implications of the sample size and maturation resulting in the inconsistency of faculty, curricular delivery, and labor market trends. These issues presented a possible bias in the sample. The data were limited to only one school. The sample size was small. Further changes associated with maturation may have prompted further issues. Conclusions and results partially support the research of the benefit of service-learning through increased employment rates. The findings of research conducted with a limited sample size cannot be commonly applied to all medical assistant programs (Tipton et al., 2017).

Recommendations

Recommendations for changes in the practices of medical assistant educational programs are associated with the common themes that emerged through the findings of the study. The issue of a noncognitive skills gap extends beyond the medical assistant program groups evaluated at one technical college. Evidence of a more widespread problem is supported through research (Bringle et al., 2016; Finch et al., 2013; Patil et al., 2020; Randolph, 2016). Additional evidence suggests noncognitive skills are significant for graduates who seek to enter a health-care profession (Brock et al., 2019; Tulgan, 2016).

Medical assistant educators should closely evaluate assessment strategies to promote the development of a noncognitive skill set. The benefits of service-learning presented through findings of past practice promote the use of the pedagogy as a teaching and learning strategy. Educators should integrate multiple learning activities. Examples of additional activities may include problem- and project-based learning activities through the evaluation and reflection of case studies and role playing in the classroom and within communities of practice (Nieminen & Hytti, 2016; Servey & Wyrick, 2018; Sudria et al., 2018).

An additional recommendation for medical assistant educators and program directors of CAAHEP-accredited programs involves the MAERB Employer Survey (see Appendix I). A concern associated with limitations ranging from a lack of participation to limited feedback and conflicting outcomes of feedback with the use of similar survey instruments was present in this study and past studies (Dabke, 2017; Servey & Wyrick, 2018). Program directors of CAAHEP-accredited medical assistant programs should educate employers who complete the survey to inform them of the significance of their participation and how the data are used to evaluate program outcomes. Program directors will also benefit from the development of a tracking system to follow up with employers who received the survey but did not provide feedback.

Recommendations for future research emerged from the data analysis and findings. Limited quantitative research of the use of service-learning as an intervention to promote noncognitive skills development exists. Research in the field is primarily qualitative and does not measure quantitative educational outcomes (Brail, 2016; Bringle et al., 2016). A lack of research specific to noncognitive skills development in medical assistant education was identified. Future research should be quantitative or mixed-methods. The research design developed in the program may be used to evaluate a larger sample size and will respond to established needs to study the benefits of service-learning through evaluation of external stakeholders and program outcomes (Rutti et al., 2016; Thomas, 2017).

Implications for Leadership

The results of the study are significant to noncognitive skills development in medical assistant programs and are transferrable to other educational program areas in which students demonstrate a lack of noncognitive skills development. The findings of the study and the recommendations can provide further implications for the evaluation of curricular content that

promotes noncognitive skills development. Implications for educational leaders and leaders of employment organizations could produce a positive response to the problem presented in the study.

Learning activities and assessment strategies with a focus on noncognitive skills development may aid students in the development of self-efficacy and a servant leadership style. Individuals who develop a high sense of self-efficacy demonstrate higher social awareness and higher physiological response awareness and can actively problem-solve when faced with setbacks. Attributes of this nature are deemed valuable in employment settings and play an important role in professional performance, employee engagement, and satisfaction (Bumann & Younkin, 2012). Servant leadership philosophies can be developed through service-learning and are linked to positive benefits for organizations that promote this style (Bloomquist, 2015; Northouse, 2015). The benefits for organizations include higher levels of organizational learning, lower turnover rates, and more helpful employee behaviors (Heyler & Martin, 2018).

Educational leaders are prompted to evaluate the curriculum to determine whether sufficient learning activities and assessment strategies exist to develop noncognitive skills. Educational and employer leaders are encouraged to provide students with experiential learning opportunities within their fields of practice. Collaboration among educational and employment leaders is required to assess the efficacy of teaching and learning strategies. Educational leaders must provide insight into the survey evaluation methods and be persistent in collection techniques. Employer leaders must provide regular and consistent feedback for ongoing assessment and evaluation. A joint effort of stakeholder review and educational program review supports a program evaluation process grounded in research strategies (Thomas, 2017). This collaboration will demonstrate a commitment to preparing learners for societal needs.

Conclusion

This quantitative ex post facto study tested for statistically significant differences in program outcomes of medical assistant graduates. The study was grounded in a cyclical theoretical framework that demonstrated the student experience through service-learning opportunities. Research questions served as the basis for tests of statistical significance related to program outcome measures of a treatment group that completed the academic program with service-learning linked to curricular requirements and a control group that did not use service-learning.

The results of the research study demonstrated an increase in the employment rates of graduates but did not demonstrate statistically significant differences between service-learning participation (treatment vs. control) on the employment rates, employer satisfaction of noncognitive skills development, and overall employer satisfaction of hired medical assistant graduates. Findings could not be used to confirm or deny the benefits of service-learning to promote noncognitive skills development referenced in literature but demonstrated potential benefits to the use of the pedagogy, recommendations for leaders and practitioners, and implications for future research. Contributions to an underdeveloped area of research derived from the study and provided additional benefits.

Educators may use the findings of this study to develop pedagogical strategies to address the noncognitive skills gap among students. Recommendations emerging from the study prompt educators and educational leaders to evaluate the curriculum for pedagogical strategies that will provide students with the opportunity to build noncognitive skills and to assess program outcomes. Service-learning is promoted as a strategy for noncognitive skill building, but educators are cautioned against sole reliance on the activity. The findings support past

recommendations to integrate diverse learning activities that may include problem- and project-based learning activities through the evaluation and reflection of case studies and role playing in the classroom and within communities of practice (Nieminen & Hytti, 2016; Servey & Wyrick, 2018; Sudria et al., 2018).

Collaboration among educational programs and employers emerged as a theme of the research. Employers can provide opportunities for students to gain experience within the communities of practice. Ongoing program evaluation is another implication of the study that will require collaboration between educational settings and employment settings. Program evaluation was identified as an essential component to determine the efficacy of pedagogical strategies. Educators and employers must work jointly to seek and provide regular feedback related to program outcomes. The research positively contributes to the use of service-learning as a pedagogy to promote noncognitive skills development. The recommendations and implications for future research and practices will further promote the noncognitive skills of future employees.

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Appendix A

Email Correspondence From the MAERB

Medical Assisting Education Review Board

August 31, 2020

Bobbi J. Fields, MPA, CMA (AAMA)
TRANSMITTED BY EMAIL

Dear Ms. Fields,

Thank you so much for your interesting and informative letter about your proposed research. It's a fascinating area of study, and I am sure that the field of medical assisting education will benefit from the final product.

In terms of the use of our Employer Satisfaction Survey, you have the permission of MAERB to use that survey in your research, as long as it is appropriately documented that MAERB is the source for the survey. In addition, you can use any of the other information that is available on our website, as it is all public information.

Thank you for your thoughtfulness in ensuring that the material is available for your use. And please let me know if I can help you in any other ways.

Best wishes,

Appendix B

MAERB Dashboard

Dashboard

Institution Name: **A Team Sample January 2020**
City, State: **Dallas, TX**
ID Number: **4903**
Program Type: **Diploma**

Dashboard | General Information | Enrollment, Retention & Graduation | NOTE | Graduation Year Data | Graduate Survey | Job Placement | Employer Survey | Exam | Print

Before submitting this cohort data you must complete the following:

Year	Retention	Graduate Participation	Graduate Satisfaction	Job Placement	Employer Participation	Employer Satisfaction	Exam Participation	Exam Passage	# Graduates by Admission Year	# Graduates by Year of Graduation
	>=60%	>=30%	>=80%	>=60%	>=30%	>=80%	>=30%	>=60%		
2018	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	85.71%	0	0
2017	64.52%						52.63%	90.00%	17	19
2016	62.50%						62.50%	60.00%	20	16
2015	68.18%						38.89%	71.43%	15	18
2014	67.86%						53.33%	75.00%	19	15
Cumulative	65.49%	0.00%	0.00%	0.00%	0.00%	0.00%	72.06%	77.55%	71	68

Home | Annual Report Form | Members and Staff | Educators | Surveyors | Documents | Reference | News and Events

20 N. Wacker Drive, Suite 1575 Chicago, IL 60606 1-800-228-2262

From *2019 Annual Report Instructions for Completion*, by Medical Assisting Education Review Board, 2020 (https://www.maerb.org/Portals/0/2019ARFinstructionsSpring.pdf). In the public domain.

Appendix C

Letter to IRB

May 11, 2020

Dear Dr.

I am a doctoral candidate at American College of Education (ACE) and writing to request permission to use survey data from the Medical Assistant Education Review Board (MEARB) Employer Satisfaction survey instrument. The survey is sent to employers of medical assistant graduates and is used to measure employer satisfaction of graduate preparedness. The survey results are reported to The Commission on Accreditation of Allied Health Education's MAERB as a part of the annual reporting process for programmatic accreditation.

This information will be used for my dissertation research related to, *A Non-cognitive Skills Gap among Medical Assistant Students*. Medical assistant students are prepared to conduct a variety of clinical and lab skills such as measuring vital signs, performing procedures, administering immunizations, and collecting lab specimens. Conversely, medical assistant education programs are largely focused on achievement of cognitive and psychomotor competencies (MAERB, 2017). Brown, et al. (2013) suggested the many responsibilities of medical assistants warrant additional emphasis on non-cognitive skills which promote therapeutic encounters. Non-cognitive skills are valued in the labor market and can be described as attributes such as perseverance, self-control, attentiveness, empathy, self-efficacy, and resilience to adversity (Kautz, et al., 2017).

Qualitative research of medical assistant educational programs was conducted at a Midwest Technical College. Randolph (2016) demonstrated a potential for non-cognitive skill development through the use of service-learning, a form of experiential learning which occurs outside of the classroom and provides an opportunity for students to apply skills in community settings. Accredited medical assistant programs link experiential learning to the curriculum through a clinical practicum of a minimum of 160-hours; however, there are no requirements to incorporate service-learning as a form of experiential learning (MAERB, 2017).

The purpose of this quantitative study is to understand the influence of service-learning when voluntarily linked to curriculum of a medical assisting program to determine the impact on the development of non-cognitive skills for employability. This study will be guided by research questions evaluating a potential relationship among longitudinal data spanning a four-year period of categorical values. The categorical values associated with non-cognitive skills attainment include employment rates of graduates, employer satisfaction of affective domain, and overall employer satisfaction of hired graduates.

Bobbi J Fields

The proposed quasi-experimental study will evaluate longitudinal data of outcome variables of employment rates, employer satisfaction of affective domain, and overall employer satisfaction of medical assistant graduates. A pretest-posttest design will be used to evaluate data from graduating cohorts using the intervention of service learning to a graduating cohort that did not use the intervention of service learning. Service learning was formally linked to curriculum during the 2016-2017 academic year, in response to accreditation updates that incorporated additional curricular competencies related to affective domain (MAERB, 2017).

Participation criteria will be limited to 2016, 2017, 2018, and 2019 graduates. Medical assistant graduates in years 2017-2019 used the intervention of service-learning, while 2016 graduates, a non-randomly selected control group, did not use service-learning. The sample includes 168 medical assistant graduates. There were 44 graduates in 2016, 58 graduates in 2017, 25 graduates in 2018, and 37 graduates in 2019. Independent variable data include the presence or absence of service-learning. Dependent variable data include employment rates of graduates, employer satisfaction of affective domain competency mastery of hired graduates, and overall employer satisfaction of hired graduates.

Findings of the study may be disseminated through various mediums and can be shared with the sixteen technical colleges of the system, accreditation review board, professional organizations, and local employers to develop best practices related to curriculum development and experiential learning opportunities. To maintain privacy of data, I plan to adopt a pseudonym, "Central State College" for the study and will ensure all Personally Identifiable Information of individuals indicated on any survey data is safeguarded and omitted from results reporting.

Important Contacts for this study include:
Principal Investigator: Bobbi Fields **Dissertation Chair:** Dr. Krista Allison

I have discussed proposed research with Dr. Jim Eden, Vice President of Academics and Sarah Chojnacki, Medical Assistant Program Director. Both individuals have verbally expressed their support of the project. Thank you for your attention to this request and prompt response. I have included Moraine Park's Determination of Human Subject Research form. I appreciate your time and consideration of my request.

Sincerely,

Bobbi J Fields, MPA, CMA (AAMA)

Enclosure: Determination of Human Subject Research
Cc:
Vice President Academics

Appendix D

Determination of Human Subject Research

Determination of Human Subject Research

Technical College

Research Integrity & Compliance Review Office, Institutional Review Board
If there is *any* question as to whether your project is **human subject research**, please submit this form to the Technical College IRB department's chair Dr.
complete all sections and email to .edu

PROJECT CONTACT

Principal Investigator: Bobbi Fields

Alternative Contact: Dr. Krista Allison

Department: American College of Education, Dissertation Chair

Email:

Phone:

PROJECT

Project Title: A Non-cognitive Skills Gap among Medical Assistant Students: A Quantitative Study

Purpose of the project: The purpose of this study is to understand the influence of service-learning when voluntarily linked to curriculum to determine the impact on the development of non-cognitive skills for employability. This study will be guided by research questions evaluating a potential relationship among longitudinal data spanning a four-year period of categorical values. The categorical values associated with non-cognitive skills attainment include employment rates of graduates, employer satisfaction of affective domain, and overall employer satisfaction of hired graduates.

V20180328IEDMPTCIRBF3

PROJECT PROCEDURES

Description: Annually, accredited medical assistant programs are required to collect and report program outcomes related to; retention rates, graduate satisfaction rates, employment rate (positive placement in a related field of study, advancing educational degree or military service), employer satisfaction, credentialing exam participation and pass rates. The MAERB Employer Satisfaction Survey instrument tool employs a five-point Likert scale rating which is assigned to each question and is comprised of one question related to cognitive domain, two questions related to psychomotor domain, eight questions related to affective domain, and one question related to overall satisfaction. Questions associated with affective domain correlate to the graduates' use of judgement, communication skills, ethical and professional behavior, ability to accept supervision, punctuality and preparedness, and contribution to a positive environment (MAERB, 2009). These questions assess non-cognitive skills. The MAERB (2009) considers a score of three or higher favorable. The survey instrument is available online for public use (MAERB, 2009).

Source of Data: The MAERB survey instrument is administered through the college's Institutional Research Department to employers of graduates.

Source of Specimens: N/A

Collection Circumstances: Participation criteria will be limited to 2016, 2017, 2018, and 2019 graduates. Medical assistant graduates in years 2017-2019 used the intervention of service-learning, while 2016 graduates, a non-randomly selected control group, did not use service-learning. Independent variable data include the presence or absence of service-learning. Dependent variable data include employment rates of graduates, employer satisfaction of affective domain competency mastery of hired graduates, and overall employer satisfaction of hired graduates.

IS THIS RESEARCH ACTIVITY?

Research: A systematic investigation designed to develop or contribute to generalizable knowledge.

Do you consider this project to meet the definition of research?

YES: X
NO:

If "no" explain why:

DOES THIS RESEARCH INVOLVE HUMAN SUBJECTS?
Does your project include obtaining data or specimens about a living individual through intervention or interaction or by collecting personal identifying information about the individual? YES: X NO:

DOES YOUR PROJECT INVOLVE THE USE OF EXISING DATA OR SPECIMENS?
YES: X NO:

If "**YES**" answer the following:

1. Do the data or specimens contain identifiable private information (i.e. the identity of the subject is or may be readily ascertained or can be associated with the information?

YES	**X**
NO	

2. Are the data or specimens coded such that a link exists that could allow the data or specimens to be identified?

YES	
NO	**X**

3. If 'yes', is there an agreement prohibiting the PI and their staff access to the key to the code?

YES	**X**
NO	

4. Were the data or specimens originally collected for this project?

YES	
NO	**X**

5. Were the data or specimens originally collected during standard clinical care?

YES	
NO	**X**

6. Were the data or specimens originally collected for research purposes under an IRB approved protocol?

YES	**X**
NO	

IS THIS FDA-REGULATED RESEARCH?

Does your project include testing the safety and efficacy of a drug or device in a living individual?

YES:
NO: X

Does your project include an *In Vitro* Diagnostic Device?

YES:
NO: X

OTHER CONSIDERATIONS?

Does your project involve human embryonic stem cells (hESC), adult human stem cells, pluripotent cells or somatic nuclear transplantation?

YES:
NO: X

Does your project involve the use of fetal tissue?

YES:
NO: X

EXTERNAL FUNDING?

Is your project supported by external funding?

YES:
NO: X

If 'YES': provide a copy of the grant application, contract, agreement, etc. for this project with this form. Funding is provided from the USDA through a cooperative agreement.

Thank you for your complete application.

The MPTCIRB will send you a *Notice of Determination of Human Subject Research* or will contact you if more information is needed.

Appendix E

Technical College IRB Determination

TECHNICAL COLLEGE

INSTITUTIONAL REVIEW BOARD

September, 15th 2020

Protocol #: MTCPIRB 20201509-1

Project Title: Non-Cognitive Skills Gap among Medical Assistant Students: A Quantitative Design

Dear Bobbie Fields

Thank you for submitting your application for exemption to the Technical College Institutional Review Board (MPTC IRB). The IRB appreciates your work in completing the proposal. Your proposal was evaluated in light of the federal regulations that govern the protection of human subjects.

Specifically, 45 CFR 46.101(b) (2) identifies studies that are exempt from IRB review, including:

> Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The IRB has determined that your proposed project employs surveys that pose no more than minimal risk to the participants. The information will be obtained in such a way that one's responses will not be linked to one's identity or identifying information. Moreover, accidental disclosure of the participants' responses would not have the potential to harm to the person's reputation, employability, financial status, or legal standing. For these reasons, the MPTC IRB has determined that your proposed study is exempt from further IRB review.

Even though your project is exempt from IRB review, the research must be conducted according to the proposal submitted to the MPTC IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For ***any*** proposed changes in your research protocol, please submit a Request for Modification form to the MPTC IRB. Please be aware that changes to the research protocol may prevent the research from qualifying for exempt review and require submission of a new IRB application or other materials to the MPTC IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the MPTC IRB as soon as possible. If notified, we will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact me.

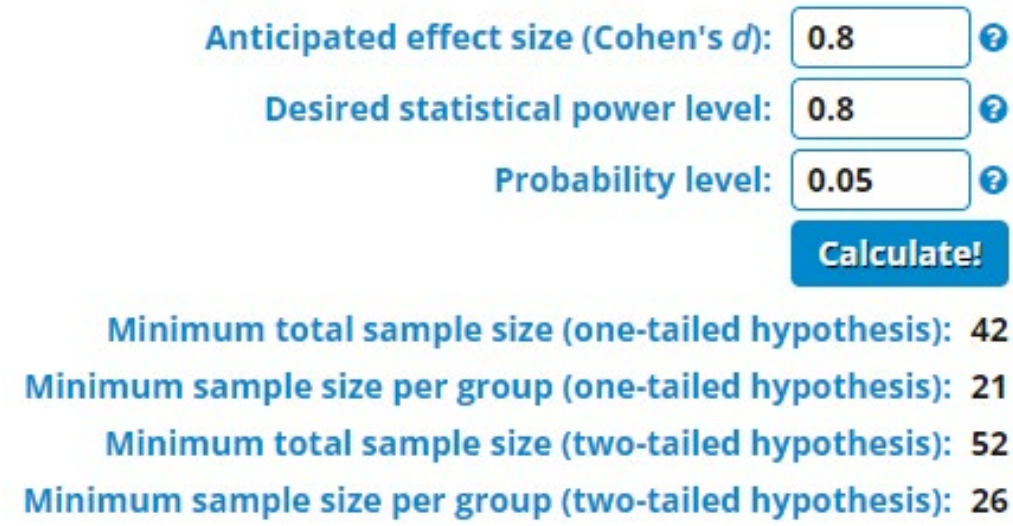
Sincerely,

IRB Chair. Director. Technical College Institutional Review Board

cc: Dr Vice President of Academic Affairs
Dr Dean of Applied Technology/Trades
. Associate Dean of General Education
Assistant Chief o Police Department

Appendix F

Priori Sample Size Calculation



From *A-priori Sample Size Calculator for Student t-Tests* by Soper, 2022 (https://www.maerb.org/Portals/0/Documents/EmployerSurvey.doc). In the public domain.

Appendix G

Letter to the MAERB

August 30, 2020

Executive Director
Medical Assisting Education Review Board

Dear Dr.

I am a doctoral candidate at American College of Education (ACE) and writing to request permission to use the Medical Assistant Education Review Board (MEARB) Employer Satisfaction survey instrument. The survey was sent to employers of Moraine Park's medical assistant graduates and is used to measure employer satisfaction of graduate preparedness for annual accreditation reporting. I am in communication with the IRB of Moraine Park and have requested the use of the data collected from the MAERB survey instrument.

This information will be used for my dissertation research related to, *A Non-cognitive Skills Gap among Medical Assistant Students*. Medical assistant students are prepared to conduct a variety of clinical and lab skills such as measuring vital signs, performing procedures, administering immunizations, and collecting lab specimens. Conversely, medical assistant education programs are largely focused on achievement of cognitive and psychomotor competencies (MAERB, 2017). Brown, et al. (2013) suggested the many responsibilities of medical assistants warrant additional emphasis on non-cognitive skills which promote therapeutic encounters. Non-cognitive skills are valued in the labor market and can be described as attributes such as perseverance, self-control, attentiveness, empathy, self-efficacy, and resilience to adversity (Kautz, et al., 2017).

Qualitative research of medical assistant educational programs was conducted at a Midwest Technical College. Randolph (2016) demonstrated a potential for non-cognitive skill development through the use of service-learning, a form of experiential learning which occurs outside of the classroom and provides an opportunity for students to apply skills in community settings. Accredited medical assistant programs link experiential learning to the curriculum through a clinical practicum of a minimum of 160-hours; however, there are no requirements to incorporate service-learning as a form of experiential learning (MAERB, 2017).

The purpose of this quantitative study is to understand the influence of service-learning when voluntarily linked to curriculum of a medical assisting program to determine the impact on the development of non-cognitive skills for employability. This study will be guided by research questions evaluating a potential relationship among longitudinal data spanning a four-year period of categorical values. The categorical values associated with non-cognitive skills attainment include employment rates of graduates, employer satisfaction of affective domain, and overall employer satisfaction of hired graduates.

The proposed quasi-experimental study will evaluate longitudinal data of outcome variables of employment rates, employer satisfaction of affective domain, and overall employer satisfaction of medical assistant graduates. A pretest-posttest design will be used to evaluate data from graduating cohorts using the intervention of service learning to a graduating cohort that did not use the intervention of service learning. Service learning was formally linked to curriculum during the 2016-2017 academic year, in response to accreditation updates that incorporated additional curricular competencies related to affective domain (MAERB, 2017).

Participation criteria will be limited to 2016, 2017, 2018, and 2019 graduates. Medical assistant graduates in years 2017-2019 used the intervention of service-learning, while 2016 graduates, a non-randomly selected control group, did not use service-learning. The sample includes 168 medical assistant graduates. There were 44 graduates in 2016, 58 graduates in 2017, 25 graduates in 2018, and 37 graduates in 2019. Independent variable data include the presence or absence of service-learning. Dependent variable data include employment rates of graduates, employer satisfaction of affective domain competency mastery of hired graduates, and overall employer satisfaction of hired graduates.

Findings of the study may be disseminated through various mediums and can be shared with the sixteen technical colleges of the system, accreditation review board, professional organizations, and local employers to develop best practices related to curriculum development and experiential learning opportunities. To maintain privacy of data, I plan to adopt a pseudonym, "Central State College" for the study and will ensure all Personally Identifiable Information of individuals indicated on any survey data is safeguarded and omitted from results reporting.

Important Contacts for this study include:
Principal Investigator: Bobbi Fields Dissertation Chair: Dr. Krista Allison

I have discussed proposed research with Medical Assistant Program Director, Service Learning Coordinator, Vice President of Academic, and Director of Institutional Research. These individuals have verbally expressed their support of the project. Thank you for your attention to this request and prompt response to my request to use the MAEARB Employer Satisfaction Survey Instrument. I appreciate your time and consideration of my request.

Sincerely,

Bobbi J Fields, MPA, CMA (AAMA)

Appendix H

MAERB Graduate Survey

GRADUATE SURVEY

Insert Name of College
Medical Assisting Program

NOTE TO PROGRAMS: You need to make sure that you know the year that the student graduated from the program. The survey can be anonymous, but you need to require that the student fill out the year or you need to label the form with the year.

The primary goal of a Medical Assisting Education program is to prepare each graduate to function as a competent entry-level Medical Assistant. This survey is designed to help program faculty determine their program's strengths and those areas that need improvement. All data will be kept confidential and will be used for program evaluation purposes only.

BACKGROUND INFORMATION:

First and last name (optional): _____ In what calendar year did you graduate? _____

Job title: _____ What is your current salary or hourly wage (optional)? _____

Name of the company/employer for whom you work: _____

Are you working either as a medical assistant or in a field that is related to medical assisting? (**Yes/No**) _____

If "yes," how long have you been there? _____ If "no," what are you doing? _____

Indicate which certification exam/s, if any, that you passed. (*Check all that apply*):

_____ CMA (AAMA) _____ RMA (AMT) _____ NCMA (NCCT) _____ CCMA (NHA) _____CMAC (AMCA)

Did you take but not pass any of the above-listed certification exams? If so, which one? _____

INSTRUCTIONS: Consider each item separately and rate each item independently of all others. Circle the rating that indicates the extent to which you agree with each statement. Please do not skip any item.
5 = Strongly Agree 4 = Agree 3 = Neutral (acceptable) 2 = Disagree 1 = Strongly Disagree

Cognitive Domain: The program…

1. Helped me to acquire the medical assisting knowledge appropriate to my level of training 5 4 3 2 1
2. Prepared and encouraged me to apply for and pass a professional credentialing exam 5 4 3 2 1

Psychomotor Domain: The program…

3. Prepared me to collect patient data effectively 5 4 3 2 1
4. Prepared me to perform appropriate diagnostic and medical procedures 5 4 3 2 1
5. Prepared me to use sound judgment for functioning in the healthcare setting 5 4 3 2 1
6. Prepared me to perform all clinical skills appropriate to entry-level medical assisting 5 4 3 2 1
7. Prepared me to perform all administrative skills appropriate to entry-level medical assisting 5 4 3 2 1

Affective Domain: The program…

8. Prepared me to communicate effectively in the healthcare setting 5 4 3 2 1
9. Prepared me to conduct myself in an ethical and professional manner 5 4 3 2 1
10. Prepared me to manage my time efficiently while functioning in the healthcare setting 5 4 3 2 1

11. OVERALL, the program prepared me very well to do entry-level medical assisting work.

Please provide comments and suggestions that would help to better prepare future graduates.

_____

From *Graduate Survey* by Medical Assisting Education Review Board, 2019 (https://www.maerb.org/Portals/0/Documents/GraduateSurvey10.11.19.docx). In the public domain.

Appendix I

MAERB Employer Survey

EMPLOYER SURVEY

Insert Name of College
Medical Assisting Program

The primary goal of a Medical Assisting Education program is to prepare each graduate to function as a competent Medical Assistant. This survey is designed to help program faculty determine their program's strengths and those areas that need improvement. All data will be kept confidential and will be used for program evaluation purposes only. We request that this survey be completed by the graduate's immediate supervisor.

Name of Graduate: _____

Length of employment at time of survey: _____ years and _____ months

Place of employment: _____

INSTRUCTIONS: Consider each item separately and rate each item independently of all others. Circle the rating that indicates the extent to which you agree with each statement. Please do not skip any item.
5 = Strongly Agree 4 = Agree 3 = Neutral (acceptable) 2 = Disagree 1 = Strongly Disagree

Cognitive Domain:
The graduate:

1.	Has medical assisting knowledge appropriate to his/her level of training.	5	4	3	2	1

Psychomotor Domain:
The graduate:

2.	Is able to collect pertinent data accurately from charts and patients.	5	4	3	2	1
3.	Is able to perform appropriate diagnostic and medical procedures as directed.	5	4	3	2	1

Affective Domain:
The graduate:

4.	Uses good judgment while functioning in the ambulatory healthcare setting.	5	4	3	2	1
5.	Communicates effectively in the healthcare setting.	5	4	3	2	1
6.	Conducts himself/herself in an ethical and professional manner.	5	4	3	2	1
7.	Functions effectively as a member of the healthcare team.	5	4	3	2	1
8.	Accepts supervision and works effectively with supervisory personnel.	5	4	3	2	1
9.	Is self-directed and responsible for his/her actions.	5	4	3	2	1
10.	Arrives to work prepared and on time.	5	4	3	2	1
11.	Contributes to a positive environment in the department.	5	4	3	2	1
12.	Overall, this graduate is a well prepared employee?	5	4	3	2	1

Comments:

What qualities or skills did you expect of the graduate upon employment that he/she *did not* possess?

Please provide comments and suggestions that would help this program to better prepare future graduates.

What are the strengths of the graduate(s) of this program?

Name, Credentials, and Title of Evaluator:

Please Print: _____ **Date:** _____

Signature: _____

Thank you in advance.

Revised: 2/09

From *Graduate Survey* by Medical Assisting Education Review Board, 2009 (https://www.maerb.org/Portals/0/Documents/EmployerSurvey.doc). In the public domain.

Appendix J

Service-Learning Performance Assessment Task

509-310 Medical Assistant Practicum

Performance Assessment Task: Service Learning Project

Directions

The following criteria is used for approval of service learning activities:

- Students must complete 40 hours of service learning.
- Service learning activities must be related to program coursework and completed in a public/community setting with a non-profit organization, governmental agency, community group, church, school, etc.
- Activities must be pre-approved by the instructor.
- Service learning activities are completed prior to clinical site placement.
- Instructors may coordinate a limited number of events; however, students are ultimately responsible to schedule and complete their own hours by the established due dates.
- Students will adhere to standards of professionalism while performing service learning activities as outlined in the Professionalism Contract.
- Hours must be logged and signed off by the sponsoring organization or agency.
- If the sponsoring organization or agency requires formal training, this may be logged as volunteer time.
- Students will reflect on the experience, identify how the experience prepares them for completion of the 160 hour clinical site placement, and how they can use the experience to strengthen career goals.

Participate in the course discussion threads to share your service learning experiences with the class. Refer to the guidelines for participation in discussion topics as outlined in the Medical Office Cluster Program Handbook (located in Program Policies section).

Submit your signed logs to validate completion of a minimum of 40 hours of service learning.

Submit the written reflection of your service learning experrience. Follow paper standards outlined in the Medical Office Cluster Program Handbook (located in Program Policies section).

Evaluator(s)

Employer

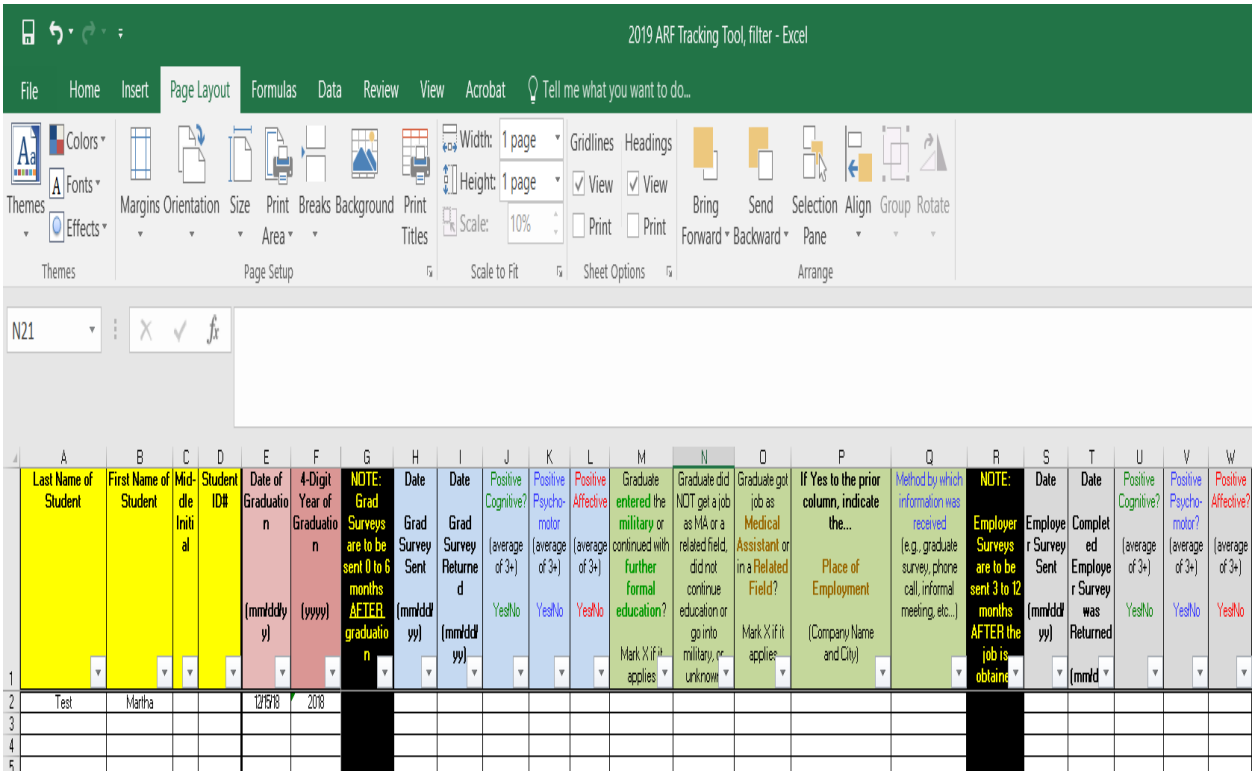
Instructor

Target Course Competencies

1. Demonstrate professionalism in a health care setting

Appendix K

Excel Tracking Tool



From *2019 and Beyond ARF Tracking Tool*, by Medical Assisting Education Review Board, 2019 (https://www.maerb.org/Portals/0/AccreditationDocuments/2019%20ARF%20Tracking%20Tool,%20filter.xlsx). In the public domain.

Appendix L

Email to Employers

Hi ${m://FirstName},

We are looking to collect information on employers' perceptions of our recent Medical Assistant graduates. The primary goal of a Medical Assisting Education program is to prepare each graduate to function as a competent Medical Assistant. The following survey is designed to help (**insert name of college**) faculty determine the Medical Assisting program's strengths and the areas that need improvement.

All collected data will be kept confidential and will be used for program evaluation purposes only.

We are asking you to share your thoughts and experiences on the following graduate: **Insert Name.**

Please complete this brief 5-minute survey by **Month XX, XXXX.**

Thank you,

Insert Name, CMA (AAMA)

Medical Assisting Instructor, Program Director

Appendix M

ACE IRB Determination

June 16, 2021

To : Bobbi Fields
Krista Allison, Dissertation Committee Chair

From : Institutional Review Board
American College of Education

Re: IRB Approval

"Non-Cognitive Skills Gap among Medical Assistant Students: A Quantitative Design"

The American College of Education IRB has reviewed your application, proposal, and any related materials. We have determined that your research provides sufficient protection of human subjects.

Your research is therefore approved to proceed. The expiration date for this IRB approval is one year from the date of review completion, June 16, 2022. If you would like to continue your research beyond this point, including data collection and/or analysis of private data, you must submit a renewal request to the IRB.

Our best to you as you continue your studies.

Sincerely,

Chair, Institutional Review Board