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Identifying Training Competencies to Enhance Community-Based Program After-School Volunteer Performance

Charlene Sanders
Walden University

Walden University

College of Social and Behavioral Sciences

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Charlene Sanders

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Review Committee
Dr. Randy Heinrich, Committee Chairperson,
Human and Social Services Faculty

Dr. Barbara Benoliel, Committee Member,
Human and Social Services Faculty

Dr. Scott Hershberger, University Reviewer,
Human and Social Services Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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by

Charlene Sanders

MS, Walden University 2017

BA, Hampton, 2016

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Between 2013 and 2014, 25.2% of 10th grade algebra students who worked with 870,000 adult volunteers in after-school programs in the United States met their goals of improved math proficiency scores. A gap exists involving volunteer training strategies for after-school programs that are effective in improving math proficiency of 10th grade math students. The purpose of this study was to explore what seven experts in the Atlantic Coastal Region of the United States believe are optimal practices for training volunteers in after-school settings. A modified Delphi process evolved towards consensus in three iterative rounds. Goffman's framing communication theory was the foundation to support the findings of the panelists. The research question that guided this study was: What math instructional strategies can leaders and trainers in low socioeconomic status (SES) communities use to enhance the support of volunteers who work in after-school settings with 10th grade students? Through purposive sampling, experts were selected based on their understanding of concepts related to math instruction and at least 10 years' experience working with the appropriate volunteers. Data analysis included extracting themes in each round and using these in subsequent rounds, while testing for and, ultimately, reaching consensus. Results involve 10 strategies for altering leaders' viewpoint regarding communication and collaboration between volunteers and trainers, building trust between volunteers and students, understanding needs of SES students, and teaching pedagogy using real-world examples. Organizational leaders and human service staff may gain key volunteer training strategies to develop robust after-school training programs. If adopted, strategies may transform contributions of volunteers to 10th grade math student learning and the employment trajectory of low SES high school students.

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Dedication

I give honor to God who is my source and has equipped me with the strength and determination to accomplish this assignment. I dedicate this dissertation to my wonderful husband, Ramai Jabulani, who has been my place of peace during the most important part of this journey, my seven unstoppable children Maurice, David, Jonathan, Ronisha, Jamal, Kiya, and Keith who have cheered me on from the conception of this doctorial milestone.

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Chapter 1: Introduction to the Study

Approximately 55% of U.S. high school students in Grades 9-12 fell short of math proficiency between 2009 and 2016 (National Center for Education Statistics [NCES], 2018; Saw & Chang, 2018; Shivraj, 2017). Hence, high school graduates have faced difficulties demonstrating proficiency when attempting to pursue training for critical science and math careers (Balkis et al., 2016; Freeman et al., 2015). High school students who fall short of math proficiency have an increased risk of poor academic performance (Archambault et al., 2017; Chi et al., 2018; Peña et al., 2018; Van Rijk et al., 2018).

Family socioeconomic status (SES) may affect a student's academic success (Yelgün & Karaman, 2015). Students living in low SES communities experience effects of issues that students living in higher SES communities do not, such as high exposure to crime, poor nutrition, and low parental supervision (Barbarin & Aikens, 2015). Because of low school budgets, students living in low SES communities have fewer school resources available, which also reduces academic success relative to students in higher SES communities (Barbarin & Aikens, 2015). Nevertheless, students in Grades 9–12 who attend after-school intervention programs, such as those provided by the Boys & Girls Club of America or the Young Men's Christian Association (YMCA), have demonstrated improvements in academic performance (Baldwin et al., 2015; Cappella et al., 2018; Jenson et al., 2018; Virginia Department of Education, 2018).

Volunteers are an important resource for the U.S. school system (Gross et al., 2015). Approximately 68,000,000 people volunteered in the U.S. annually from 2015 and 2016 (Bureau of Labor Statistics [BLS], 2016; Joseph, 2016; Rodell et al., 2017). Of

these U.S. volunteers, 25.2% worked on interventions that could help students develop strategies and knowledge to understand school instruction (Gross et al., 2015). Gross et al. (2015) reported that 870,000 adults in the United States provided volunteer support for students in after-school programs. Wagner (2019) posited that training volunteers by making them aware of strategies to improve mathematical performance and how practical and meaningful mathematical concepts are will allow those volunteers to convey mathematics to after-school students in a meaningful and fun way. Leaders and trainers of volunteers in after-school programs reported an increase in volunteer retention when volunteers were included in after-school programing and volunteers could see improvement in students' academic success (Wagner, 2019). Conversely, failure to develop such training and support for volunteers may result in fewer opportunities to produce significant improvement in students' academic performance (Casto, 2016; Gross et al., 2015; Kremer et al., 2015; Virginia Department of Education, 2018).

National and state volunteer leaders continue to work diligently to develop community-based after-school programs that may help train volunteers to improve the math proficiency scores of high school students living in low SES communities (NCES, 2018). Burnette (2018) posited that understanding basic math concepts is a significant factor that helps students improve their math proficiency scores; improving training for after-school program volunteers may translate into better instruction for students that may result in improved math proficiency scores. In this modified Delphi study, I analyzed what experts identify as necessary strategies for training volunteers who help 10th grade algebra students in after-school programs. I addressed the gap in the literature by describing and understanding how volunteer training is necessary to implement more

comprehensive and effective after-school programs for 10th grade algebra students. I may use the study findings to produce knowledge and training tools that may assist individuals who lead or manage volunteer training. I will seek to develop from the findings a list of strategies for leading and training volunteers and provide data that others may use to develop robust orientation training modules for volunteers supporting 10th grade algebra students falling short of math competency.

Chapter 1 includes the background of the study, problem, purpose of the study, research question, theoretical framework, and nature of the study. The chapter continues with definitions of terms and concludes with a discussion of assumptions, scope and delimitations, limitations, and significance of the study.

Background

Volunteers appear to be an important resource to help leaders and trainers accomplish organizational goals and missions. Leaders and trainers may find that volunteers bring value to organizations (Wang & Wu, 2014). Jensen and McKeage (2015) found that when leaders and trainers establish positive relationships with volunteers in an organization, relationships may improve chances of volunteers returning when they are needed.

While volunteers are important to the school system, their efforts to improve student proficiency may yield poor results. Between 2013 and 2014, 25.2% of the students of the 870,000 adult volunteers who worked with 10th grade algebra students in after-school programs in the United States met their goals of improved math proficiency scores (Gross et al., 2015). Follman et al. (2016) found that 50% of after-school programs failed because volunteer management offered little staff training and few resources.

Problem Statement

Approximately 55% of U.S. high school students in Grades 9-12 fell short of math proficiency from 2009 to 2016 (NCES, 2018; Saw & Chang, 2018; Shivraj, 2017). As a result, high school graduates have faced difficulties accessing higher education and demonstrating readiness for critical science and math careers (Balkis et al., 2016; Freeman et al., 2015). High school students who fall short of math proficiency have an increased risk of poor academic performance (Archambault et al., 2017; Chi et al., 2018; Peña et al., 2018; Van Rijk et al., 2018).

Family SES may affect students' academic success (Yelgün & Karaman, 2015). Students living in low SES communities experience the effects of issues that students living in higher SES communities do not, such as high exposure to crime, poor nutrition, and low parental supervision (Barbarin & Aikens, 2015). Because of low school budgets, students living in low SES communities have fewer school resources available, which contributes to lower academic success relative to students in higher SES communities (Barbarin & Aikens, 2015). Nevertheless, students in Grades 9-12 who attend after-school intervention programs, such as those provided by the Boys & Girls Club of America or the YMCA, have demonstrated improvement in academic performance (Baldwin et al., 2015; Cappella et al., 2018; Jenson et al., 2018; Virginia Department of Education, 2018).

While volunteers are important to the school system, their efforts to improve student proficiency may yield poor results. From 2013 to 2014, approximately 870,000 volunteers attempted to help 10^{th} grade math students improve their proficiency scores, resulting in 25.2% of the students making significant improvement (Gross et al., 2015).

Follman et al. (2016) found that 50% of after-school programs failed because they offered little staff training and few resources. These findings have prompted volunteer leaders and trainers to investigate making changes to volunteer training programs to improve student productivity.

Students in low SES communities may benefit from alternative teaching options and increased social support provided by volunteers (Golan & Ahmad, 2018; Hodges et al., 2017). Wagner (2019) posited that volunteers trained to communicate the relevance and application of mathematical concepts to students in an after-school setting could produce results such as increased stimulation of student learning, improvement in student math comprehension, effects on student math proficiency scores, and positive outcomes for volunteer job performance. While some researchers have investigated the need for leading and training after-school volunteers regarding relevance and use of math concepts, I found little research on the development of critical strategies for volunteers who work in after-school programs helping 10th grade students understand math concepts.

Purpose of the Study

In this modified Delphi study, I explored what a group of experts believe are optimal practices for leading and training volunteers in after-school settings. Study findings may help those planning after-school programs in the Atlantic coast region of the United States and contribute to social change in organizations using volunteer staff to facilitate improvement in math proficiency scores of 10th grade math students. Further, these findings may facilitate modifying training programs of volunteers assisting high school students in other science and technical disciplines.

Research Question

A single research question guided the study: What math instructional strategies can leaders and trainers in low SES communities use to enhance support of volunteers who work in after-school settings with 10th grade students?

Theoretical Framework

I applied Goffman's framing communication theory throughout iterative communication with experts who lead and train volunteers in after-school settings by developing a list of strategies and assessing framing and misframing across emergent themes in this modified Delphi study. Institutional biases influence research, which, in turn affects regulatory issues rather than specific topics (Ardèvol-Abreu, 2015; Bizarrias et al., 2018; Davis & Russ, 2015). Goffman designed his theory to examine social frameworks used in interpreting life events. Iterative communication among school administrators contributed to their developing bullying intervention tools which identify bullying characteristics and reduce disciplinary issues.

Goffman (1974) posited that framing may influence group or individual roles, job titles, and experiences; not establishing a frame may result in misframing. Misframing may lead to inappropriate interpretation or behavior in a group or organization (Goffman, 1974). Accidental misframing is common when expectations are unclear. Misframing among volunteers may be the result of volunteers' perceptions of the norm (Goffman, 1974).

In my role as a researcher, I used Goffman's theory in seeking to align iterative communication among experts to frame and reframe emergent themes and determine social norms. I used this framing process to interpret experts' answer preferences during

each round of a multiple round process. Each round reflected interpretations of the group in the previous round and contributed to modification of questions posed to experts in the subsequent round. The outcome of the multiple round process is expert consensus regarding interpretations (Ardèvol-Abreu, 2015; Bizarrias et al., 2018; Davis & Russ, 2015).

Nature of the Study

I conducted a modified Delphi study to identify strategies needed by leaders and trainers in training volunteers working in after-school settings. Currently, training for volunteers working in after-school settings varies, as no training strategy guidelines for this group exist. If implemented in after-school programs in low SES communities, volunteer instruction strategies emerging from my study may improve student learning.

Expert panels are important elements in the Delphi process (Adler & Ziglio, 1996; Pollard & Pollard, 2008). For the study, I used purposive sampling to recruit a panel of seven experts with the knowledge necessary to allow me to compile a list of competencies in training volunteers. These experts were drawn from volunteer coordinators, community service managers, district facilitators, and volunteer recruiters. Essential requirements for experts included their understanding of concepts related to math instruction and a minimum of 10 years' experience working with volunteers participating in after-school programs focusing on 10^{th} grade math students. For ease of access, panel members were from the Atlantic coast region of the United States.

The data-gathering process was repeated until participants reached a consensus. For Round 1, I used open-ended questions generated by the literature review. I began Round 1 by asking the first group of experts open-ended questions regarding

characteristics of tactics and strategies necessary for volunteers working in after-school programs that focus on 10th grade math skills. I used responses from Round 1 to develop questions for subsequent iterations until clarity of consensus regarding strategies emerged. I used closed-ended questions for Rounds 2 and 3, ordered by importance and value of strategies, to establish consensus from panelists.

Selecting expert panelists is a critical part of the Delphi process (Adler & Ziglio, 1996; Pollard & Pollard, 2008). Each panelist's knowledge and expertise directly affects research quality (Adler & Ziglio, 1996; Latif et al., 2016; Linstone & Turoff, 2002). I recruited the following expert participants located in the Atlantic coastal region of the United States:

- a cultural diversity expert who is proficient in working with low SES students,
- a volunteer who currently works in a low SES community after-school program,
- a volunteer after-school program coordinator,
- a volunteer after-school program supervisor,
- a community service manager,
- a volunteer recruiter, and
- a nonprofit district facilitator who has 10 years of experience facilitating low SES after-school programs.

I followed these steps to conduct the modified Delphi study:

1. Offer a set of questions to the panel of expert participants.
2. Collect answers from each member of the panel of expert participants.
3. Code each answer according to strategies mentioned.

4. Group the coded answers into sets according to theme and rank each answer within the sets to which it belongs.
5. Offer another set of questions to the panel of experts and repeat the process for three rounds or until the participants reach a consensus.

Definitions

In this section, I define terms used throughout this study.

After-school program: A learning opportunity that takes place outside regular school hours with the intention of providing scholastic and extracurricular support to students (Deutsch et al., 2017).

Strategy: An approach that leaders use to determine the combination of skills, knowledge, and abilities linked to successful performance (Wainright et al., 2012).

Volunteers: Individuals who donate their time to perform work without receiving benefits or tangible compensation (Kang, 2016).

Assumptions

In the modified Delphi study, I assumed that each panelist understood questions asked during the focus group questions and answered them honestly. I also assumed that the findings would assist in developing a support system for those leading and training volunteers in low SES communities.

Scope and Delimitations

The study was conducted in low SES communities in the Atlantic coast region of the United States; I did not restrict participation based on organization or industry, which could distort the results. Because participants were located in the Atlantic coast region of

the United States, findings are unlikely to reflect cross-cultural implications or perceptions.

Limitations

A limitation of the study is that its findings are not generalizable beyond the expert panelists chosen, who possess specific and ungeneralizable knowledge. A modified Delphi study relies on panelists chosen from among a specific group (Linstone & Turoff, 2002). The consensus generated by one group of panelists may differ from that generated by another group (Linstone & Turoff, 2002).

Further limitations of the study involve experts misinterpreting open-ended questions, resulting in inaccurate data and findings. Participants may not return questionnaire responses in a timely fashion and lose interest, which would reduce participation.

Significance

From the study, organizational leaders may gain key training strategies to be used in developing robust training programs for volunteers for after-school support activities. Researchers may use findings to support children who need help understanding algebra concepts, support managers and human service staff involved with volunteer activities, and understand framing communication theory in action. These findings may make a significant contribution to social change within organizations using volunteer staff.

Summary

I conducted a modified Delphi study to identify key strategies for training volunteers who help 10th grade students in after-school settings understand applied math

skills. Using strategies derived from experts, I addressed the gap in the literature regarding these strategies.

I outlined the research proposal in Chapter 1. Chapter 2 contains a review of literature related to the theoretical framework and the historical and research background of volunteerism and after-school programs.

Chapter 2: Literature Review

Low SES is one reason why U.S. high school students in Grades 9-12 from 2009 to 2016 fell short of math proficiency, and consequently, lost educational and employment opportunities (Archambault et al., 2017; Balkis et al., 2016; Chi et al., 2018; Freeman et al., 2015; NCES, 2018; Peña et al., 2018; Saw & Chang, 2018; Shivraj, 2017; Van Rijk et al., 2018). While after-school volunteers may help students improve academic performance when given strategies to enhance student comprehension of applied math skills (Leos-Urbel, 2015; Wagner, 2019), volunteers may face challenges such as poor collaboration with leaders and trainers and decreasing math proficiency scores of students (Seebruck, 2015; Wagner, 2019).

I used study findings to identify strategies for leading and training volunteers and provide data that others may use to develop robust orientation training modules for volunteers supporting 10^{th} grade algebra students falling short of competency. I conducted a modified Delphi study to identify what a panel of experts believe are the best practices for leading and training volunteers in after-school settings, addressing a gap in the literature regarding volunteer training needs.

The purpose of exploring key strategies for volunteers is to determine what improves training, development, and lesson delivery and what does not. Anhalt and Cortez (2015) and Wagner (2019) explored development training for volunteers who explain math concepts to students in after-school settings and found that development training can potentially increase students' understanding of math concepts, improve job performance of volunteer staff, and support the needs of volunteers working in after-school settings. Significant to this training, Allsopp et al. (2017) and Leon-Urbel (2015)

indicated that high school students' understanding of mathematics is contingent upon using a clear understanding of math, developing an understanding of math concepts, and improving students' ability to solve problems through reasoning and critical thinking skills.

In Chapter 2, I discuss the literature search process and the study's theoretical foundation. I then discuss volunteer history and data on volunteers, after-school planning, and after-school programming. These topics are relevant to understanding the importance of developing critical strategies for leaders and trainers of volunteers who work in after-school settings.

Literature Search Strategy

For this literature review, I explored empirical data regarding the impact of leading and training volunteers who work in after-school settings. I used multiple databases and search engines, including Walden University's library catalogue, PsycINFO, SocINDEX, ProQuest Central, Google Scholar, Academic Search, and RefSeek. I used the following search terms: *volunteers*, *volunteer training*, *10th-grade math*, *10th-grade math proficiency*, *after-school programming*, *after school*, and *after-school volunteers*. I explored over 600 peer-reviewed articles published between 2014 and 2019, from which I chose 30 to review. The literature search included recent literature and older seminal literature.

Theoretical Foundation

I use Goffman's framing communication theory as the theoretical foundation of this study. Framing communication theory provides a foundation to support the findings of the panelists in this modified Delphi study. More significantly, framing

communication theory may facilitate understanding of the interventions that will be most beneficial in implementing training programs for volunteers who work in after-school programs with 10th grade math students.

Goffman's framing communication theory contributes to concepts that aid in explaining life occurrences. Gerstein and Moeschberger (2003) referred to the framing communication theory as a means of capturing behaviors and perceptions involved with social norms.

Framing communication is a theoretical approach that has guided agenda-setting traditions for many disciplines. Framing may be a means of characterizing how information is presented to an audience for specific understanding (Dahl, 2009; Goffman, 1997). Goffman (1974) designed the framing process as the method or action shaping or constructing change. Leaders may use framing communication as an abstraction to organize or structure a particular viewpoint, including that of an organization (Johnson & Romney, 2018). Framing communication theorists suggest leader biases may influence the viewpoints of others, which in turn may result in a positive outcome to affect regulatory issues rather than specific topics (Dahl, 2009; Dunn & Eble, 2015; Kádár, 2015).

Framing communication process may be used to reduce information complexity by determining information that is needed and not needed to obtain a specific goal. Organizational leaders and trainers may use framing communication process to obtain a specific outcome (Dunn & Eble, 2015; Goffman, 1994). Framing communication process may aid clearer demarcation when accessing specific interpretation of information which may guide appropriate understanding of information (Dunn & Eble, 2015; Goffman,

1994; Kádár, 2015). Leaders and trainers may use framing communication to recontextualize information to represent their perspective (Dunn & Eble, 2015; Johnson & Romney, 2018; Kádár, 2015). Framing may also be used to influence how people view sets of goals (Goffman, 1994).

Goffman's framing communication theory was central to my study's design in which a panel of experts identified strategies related to volunteer support and training. Through experts' iterative communication, I assessed framing and misframing across emergent themes. Communication is critical in determining how well information is understood (Dunn & Eble, 2015; Goffman, 1974). Iterative communication or critical discourse analysis techniques create a baseline for aligning comprehensive framing and reframing of qualitative data (Dunn & Eble, 2015; Goffman, 2014). Framing and reframing as a fundamental part of analyzing and processing data reduces ambiguity over successive iterations by contextualizing data such that panelists can increasingly relate to the research question.

History of Volunteerism

16th Century

Early descriptions of volunteers originated from 16th-century religious leaders who assigned parishioners to assist disenfranchised families (Leszek, 2019). The parishioners selected to help those leaders were best known as volunteers (Leszek, 2019). Devout leaders believed that the work and collaboration of volunteers with disenfranchised families exemplified a spiritual, moral, and healthy community that works together to accomplish community goals and empower leaders (Faherty, 2006; Hansan, 2011). In examining the positive effects of leadership structure and the value of

volunteerism, Boyet (2006) and Hollander (1990) found that establishing a leader-follower social hierarchy may directly impact individual and group identity, lending support to the benefits of 16th century leader practices with volunteers.

Sixteenth-century leaders viewed volunteering as a prosocial behavior that allowed citizens to impact low SES families and communities, enhance community success, and improve the physical health of volunteers (Johnson et al., 2016; Yeung, 2018). 16th-century Judeo-Christian leaders believed that a healthy and honorable community was defined by spiritual and moral practices of citizens living in that community (Leszek, 2019). Thus, they encouraged parishioner volunteers to work in communities to support families' spiritual and moral needs (Faherty, 2006; Hansan, 2011). Recognizing the benefits of this practice, in the early 16th century the English parliament established Elizabethan Poor Laws, which delegated responsibility for impoverished citizens to local church leaders (Faherty, 2006; Hansan, 2011; Szreter et al., 2016).

19th Century

In 1860, four volunteers, Mary Goodwin, Alice Goodwin, Elizabeth Hammersley, and Louisa Bushnell, established the Dashaway Club in the United States to help at-risk youth improve their academic performance (Greene, 2018; Lesser, 1938). The volunteers believed that all youth deserved to live in positive and healthy environments (Lesser, 1938). These four women implemented social changes to encourage youth to set positive goals and remain in school (Greene, 2018; Lesser, 1938).

After many years of volunteering in the community, the four volunteers added attorney Mary Stuart Hall to the team; she provided leadership guidance and legal

support for at-risk youth (Greene, 2018; Lesser, 1938). From this foundation, the volunteers grew into an organization that worked with at-risk youth in low SES communities. Eventually, volunteer members established the Good Will Club in the northeastern United States and continued to help at-risk youth in low SES communities (Greene, 2018; Lesser, 1938). Good Will Club volunteers continued to build healthy and safe environments for youth in low SES communities so that these youth could pursue their academic goals (Greene, 2018; Lesser, 1938). In the early 1860s, the Good Will Club volunteers changed the organization's name to the Boys & Girls Clubs of America (Greene, 2018; Lesser, 1938). Members of the Boys & Girls Clubs established the first after-school program, using volunteers who supported and supervised children from low SES families (Greene, 2018; Halpern, 2002; Lesser, 1938). Managers and volunteers designed after-school programs to improve academic skills in low SES communities (Greene, 2018; Halpern, 2002; Lesser, 1938).

20th Century

Between 1906 and 1931, members of 56 independent groups replicated the Boys & Girls Clubs of America's after-school program, providing life skills for at-risk youth in low SES communities (Greene, 2018; Lesser, 1938). These members became a resource for thousands of youth and received a charter from the U.S. Congress in 1956 (Greene, 2018; Lesser, 1938).

21st Century

In the 21st century, volunteers have continued to support individuals in low SES communities where students need academic support (Balkis et al., 2016; Calzada et al., 2015; Kuhfeld et al., 2018; Morrissey & Vinopal, 2018; Taylor, 2017). Of the 68,000,000

people who volunteered in the United States in 2015, 25.2% worked in education (Bureau of Labor Statistics [BLS], 2016; Joseph, 2016; Rodell et al., 2017). Approximately 1,900 of these volunteers did not graduate from high school (BLS, 2016). Further, without the benefit of proper training volunteers supporting the estimated 26,000,000 students in 55,906 public schools in low SES communities have struggled to improve students' academic performance (BLS, 2016). Consequently, leaders and trainers have detected differences in volunteer performance outcomes based on whether volunteers received adequate training in working with students from low SES communities in after-school settings (Wagner, 2019).

Volunteers

Reasons People Volunteer

People volunteer for various reasons, including altruism. Brown et al. (2018), Kang (2016), and Sefora and Mihaela (2016) compared the impacts of donating money and time and investigated whether participants placed greater value on volunteer help or financial assistance for meeting an organization's needs. They found participants preferred volunteer services to financial donations.

Chen (2015), Knepper et al. (2015), Knutsen and Chan (2015), McDonald et al. (2015), Ottoni-Wilhelm et al. (2017), and White (2016) found that individuals may volunteer to support a particular purpose. Chen studied an after-school program to determine whether the program's structure and knowledge provided by teachers or teacher support benefited students, and determined that the after-school environment had a greater impact on students than the amount of teacher support they experienced during regular class time. Knutsen and Chan investigated the motivating factors of employees

who performed volunteer activities to a specified organization of their choosing. Knutsen and Chan found that while volunteer programs may not require volunteers to work during allotted times designed for paid employees, the motivating factor is to adhere to the tasks advised by their employer. White suggested that people usually have reasons for volunteering and not for money; satisfaction often comes from a personal connection to the cause. As time changes, an individual's motivation may also change.

Knepper et al. (2015) studied the complexities of motivation, demographics, and meeting individuals' needs in volunteer operations. Thirty-two human services managers from organizations with inadequate personnel participated in questionnaire surveys. Approximately 40% of managers disclosed their lack of knowledge in matching volunteers with specified skill sets; 31% of the managers were consistent in matching skills with assignments (Knepper et al., 2015). Leaders recruiting skilled volunteers were not skilled in training volunteers under the age of 25 years.

Knepper et al. (2015) introduced a volunteer model to address the needs of a population of volunteers. The stance taken was to train volunteers from a manager's perspective of skilled volunteers, remaining flexible in meeting the need of both the organization and the volunteer (Knepper et al. 2015). Knepper et al. suggested that more research is needed to improve comprehension of how to handle volunteers that volunteer occasionally, infrequently, or once.

Individuals rarely volunteer without a personal commitment to the cause or activity about which they are passionate (McDonald et al., 2015; Ottoni-Wilhelm et al., 2017; Tonurist & Surva, 2017). Volunteers select specific assignments based on role, location, or personal experience (McDonald et al., 2015; Ottoni-Wilhelm et al., 2017).

Volunteer Commitment

Volunteers may become engaged and loyal to organizations when they believe their contributions are valued (Gorski et al., 2017; Harp et al., 2017; Houger, 2015). Leaders who ask individual volunteers to become directly involved with specific goals may experience an increase in volunteer commitment and organizational outcomes (Hager & Brudney, 2015; Houger, 2015; Knepper et al., 2015). Volunteers may also display an increase in commitment to an organization when they receive structured training (Gorski et al., 2017; Hager & Brudney, 2015; Knepper et al., 2015). Tsai and Lin (2014) found that providing volunteers with math strategies instructions to help students in after-school settings resulted in improved student math performance, volunteer commitment, and positive organizational outcomes.

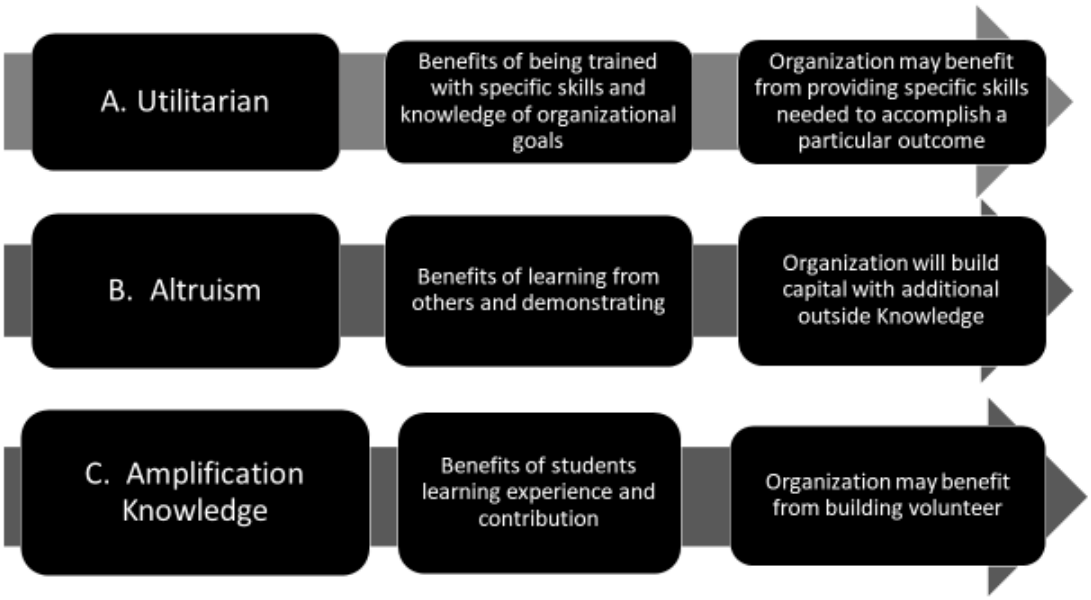
Volunteer Motivation

Not only are volunteers motivated by their commitment, their commitment also influenced their altruism (DeVaro te al., 2017, Lavigna, 2015; McFadden & Smeaton, 2017; Salamon, 2015). DeVaro et al. (2017) discovered that volunteer leaders who met the social mission goals of their organization displayed a higher level of intrinsic motivation with volunteers and that the social status of the organization may be improved. DeVaro et al. determined that volunteer leaders may achieve positive organizational outcomes when volunteer leaders increase positive engagement strategies to motivate volunteers. Volunteers were motivated when organizational training strategies and values were implemented (Lavigna, 2015; McFadden & Smeaton, 2017). Volunteering may impact an individual's personal actions and goals and fulfill specific psychological functions that may result in reasons for an individual's personal

commitments (Lavigna, rodell et al., 2017; Salamon, 2015). Volunteers may be motivated by personal development and professional growth (Jimenz Crespo, 2015; Lafigna, 2015; Veludo de Oliveria et al., 2015). McFadden and Smeaton (2017) conducted a phenomenographic research design to explore volunteer experiences and discovered that volunteers gained a deeper understanding of organizational concepts when they were exposed to theses during training sessions. When volunteer leaders motivated volunteers during the training process, positive outcomes such as shared knowledge and skills and improved staff collaboration occurred (McFadden & Smeaton, 2017). McFadden and Smeaton (2017) found that utilitarianism is the leading motivation for volunteers. Utilitarian motivation is displayed when volunteers receive the experience, training, and appreciation from volunteer leaders which may result in volunteers returning for service when needed. Figure 1 shows a description of volunteer motivations.

Figure 1

Descriptions of Volunteer Motivations



Note. Adapted from "Amplifying Student Learning Through Volunteering" by A. McFadden & K. Smeaton, 2017, *Journal of University Teaching & Learning Practice, 14*(3), p. 4 (https://ro.uow.edu.au/jutlp/vol14/iss3/6/).

Volunteer Retention

Volunteer retention varies. Maier et al. (2016), Malinen and Harju (2017), and Nemteanu and Tarcza (2015) found that volunteers who are satisfied with an organization continue to provide services to that organization. Further, Maier et al., Malinen and Harju, and Neff noted that developing positive relationships between leaders and volunteers may strengthen bonds that result in volunteer retention. Harp et al. (2017) found that 49% of volunteers who participated in their study failed to return to their organizations because of role ambiguity. Jensen (2017) and Neff (2017) indicated that

each volunteer's industrial morale and psychological characteristics determine whether he or she will return after satisfying the expectations of an organization.

Volunteer retention can influence positive outcomes. Kolar et al. (2016) and Neff (2017) found a direct correlation between volunteer activities volunteer engagement, and program sustainability. Jensen (2017), Neff (2017), and Stoyanova and Iliev (2017) indicated that as a part of planning to include volunteers in structured programs, leaders should implement strategies with measurable positive organizational outcomes. Jensen, Neff, and Stoyanova and Iliev emphasized the importance of considering the needs of volunteers and the challenges they face, which may increase volunteer retention and productivity. Liket and Mass (2015) emphasized the importance of training volunteers by using strategies that are necessary and produce positive outcomes. When leaders train volunteers using clear strategic outlines, volunteers may increase their engagement with leaders and students and help students understand math concepts by developing strategies that result in positive outcomes (Ariza-Montes & Lucia-Casademunt, 2016).

Volunteering in Low Socioeconomic Status Communities

Cameron et al. (2015) and Swahn and Bossarte (2009) stated that youth living in low SES communities receive less parental supervision and fewer academic resources than their peers in higher SES communities. While at-risk youth in low SES communities may benefit from increased community and volunteer support (Cameron et al., 2015; Swahn & Bossarte, 2009), Adler-Greene (2019) argued that lack of knowledge and understanding of the issues experienced by students living in low SES communities may impact the understanding of volunteers assisting students in these communities. Carr et al. (2015) and Galindo and Sonnenschein (2015) stated that volunteer leaders would

benefit from focusing on the talent, experience, and knowledge of the volunteers they lead.; this would include leaders who wish to improve the performance of 10th-grade math students in low SES communities.

Volunteer Training

Importance of Training Volunteers

While volunteers do not always have the experience needed to work for an organization, they volunteer their services for various personal reasons. Because after-school leaders may need volunteers to perform assignments that require knowledge and understanding, volunteers may need to receive training (Knepper et al., 2015, Reed, 2015; Wagner, 2019). Volunteer leaders may also benefit from providing strategies that guide after-school volunteers (Knepper et al., 2015; Reed, 2015; Wagner, 2019). Providing strategies for after-school volunteers may develop positive organizational relationships between volunteers and faculty members, maintain basic organizational group skills, and provide universal training usable outside an organization (Knepper et al., 2015; Reed, 2015; Wagner, 2019).

Knepper et al. (2015), Morrison (2017), and Wagner (2019) stated that although many organizations need school volunteers, few individuals have examined training and evaluation for volunteers working in low SES communities. Furthermore, Knepper et al., Nesbit et al. (2016), and Wagner demonstrated that requiring staff members to supervise untrained volunteers may have negative impacts on organizational outcomes. In mixed methods case studies, Knepper et al. and Rimes et al. (2017) found that improper training and direction for volunteers risked staff losses.

Volunteer Support

Zapata Cantu and Mondragon (2016) studied 28 participants from volunteer organizations to identify the benefits of knowledge transfer to improve productivity in after-school programs. Knowledge transfer refers to sharing knowledge through collaboration and cooperation to resolve problems that occur in an organization (Zapata Cantu & Mondragon, 2016). They found that an increase in mission strengthened communication between an organization and its stakeholders (Zapata Cantu & Mondragon, 2016). Similarly, Hume and Hume (2016) and Kushwaha and Rao (2015) proposed that volunteers may benefit when leaders implement strategies, and positive management processes using the right knowledge. This process may result in volunteers obtaining successful organizational knowledge. Finally, Zapata Cantu and Mondragon found that providing knowledge of organizational strategies positively affected volunteer retention.

After-School Program Planning

Factors Contributing to Positive Outcomes in After-School Programs

Researchers have identified factors influencing positive outcomes of after-school programs. Harp et al. (2016), Hauseman (2016), Nesbit et al. (2018), and Roth and Brooks-Gunn (2015) reviewed data on after-school programs to determine the factors necessary to provide positive outcomes for students and, with the exception of Harp et al., examined the relevance of developing after-school programs for students in diverse communities and cultures. Hauseman's criteria for planning effective after-school programs included setting specific goals, providing a safe environment, creating a culturally competent agenda, understanding and navigating barriers, ensuring community

and staff awareness, and having effective communication methods. Harp et al., Hauseman, and Roth and Books-Gunn found substantial evidence that programs incorporating these criteria in conjunction with rigorous programming evaluation improved academic outcomes for students.

Further, Grizzle and Sloan (2016) and Vandell & Lao (2016) highlighted the importance of community for developing high-quality programs for students living in low SES communities. Community organizations can offer financial and logistical support for developing high-quality programs for these students (Grizzle & Sloan, 2016; Vandell & Lao, 2016). When host schools and after-school programs work together, program staff members and volunteers may become better equipped to meet students' needs and student needs are addressed more consistently which may improve academic outcomes (Grizzle & Sloan, 2016; Vandell & Lao, 2016).

Finally, in low SES communities, explicit after-school program goals and strategies focused on family, academic, and student support and student health have produced positive outcomes for students (Leos-Urbel, 2015). Table 1 highlights goals and strategies and their impact.

Table 1

After-School Strategies

Goal in low socioeconomic status communities	Strategy	Outcome
Increase family support	Better integrate programs after school and help support families.	190,444 students enrolled in various Virginia after-school programs.
Increase academic support	Capitalize on opportunities to improve student success.	64% of after-school helps to improve student learning.
Improve student support	Provide additional student resources to improve mathematics concepts.	77% increased homework assistance.
Improve student health	Improve beneficial physical activities for students.	87% increased physical activity.

Note. From "Virginia After 3PM" by After School Alliance, 2014, (http://www.afterschoolalliance.org/documents/AA3PM-2014/VA-AA3PM-2014-Fact-Sheet.pdf).

Key Strategies for After-School Staff

Frazier et al. (2019), Huang et al. (2014), Maier et al. (2017), and Valli et al. (2014) reviewed key strategies employed for after-school staff members, observed after-school programs, and collected questionnaires data from these programs. Huang et al. and Maier et al. identified various factors related to program quality that fell into several categories: program arrangement, including management style and staff experience; program atmosphere, such as safety and positive relationships; and instructional elements, such as the variety of activities and focus on holistic development. Huang et al. used observation and scan methods to identify useful themes related to after-school

program productivity by creating checklists that managers or trainers may use as guides for interacting with students.

Further, program developers, Capella et al. (2018), Jyothi (2016), and Vandell and Lao (2016), expressed the value of plans for employing and preserving quality after-school program staff members. Gary (2017) and Vandell and Lao stated that program developers' responsibilities include establishing demographic features for after-school programs, leading and training staff members, regulating work hours, and monitoring professional development that reduces staff turnover. They also stated that program developers should examine the interior features of after-school programs to ensure that the directors and activity leaders provide activities conducive for teaching. Using staff and volunteers who have strong satisfaction knowledge, alluring teaching style, desire to enhance the program, and dedication to helping students who live in low SES communities are necessary to create high-quality after-school programs (Gary, 2017; Vandell & Lao, 2016). Figure 2 shows an affective process for establishing program planning goals regarding staffing (Bradshaw, 2015).

Figure 2

Program Planning Goals Regarding Staffing

Note. Adapted from "Planning considerations for after-school professional development" by L. D. Bradshaw, 2015, *Afterschool Matters*, *21*, p. 46-54 (https://www.niost.org/Afterschool-Matters/afterschool-matters-journal).

Professional Development Strategies for After-School Programs

Professional development opportunities and strategies are important for building and maintaining quality after-school programs. (Darling-Hammond, 2015; Gary, 2017; Hollenbeck et al., 2015; Mangi et al., 2015; Vandell & Lao, 2016). Managers of after-school programs may propose hiring staff members and volunteers with multiple skill sets and include strategies for developing activities that improve volunteer retention (Darling-Hammond, 2015; Mangi et al. 2015; Vandell & Lao, 2016). Collaboration with

universities, host schools, and community organizations may benefit after-school programs by expanding access to resources needed to improve program quality (Darling-Hammond, 2015; Yurdakal, 2015; Vandell & Lao, 2016).

Developers of after-school professional development plans for volunteers should consider time, expertise, access, resources, and support during the planning process (Bradshaw, 2015; Harp et al., 2016; Roth & Brooks-Gunn, 2015). Bradshaw (2015) and Capella et al. (2018) posited that initial planning should include evaluation of organizational finances, materials, and teaching strategies. Factors to be considered by developers include:

- the amount of time needed to implement training programs for staff members and volunteers responsible for interacting with students (Bradshaw, 2015; Roth & Brooks-Gunn, 2015),
- whether training requires physical workshops or can be completed online (Bradshaw, 2015),
- providing support by promoting a positive view of professional development and incentivizing participation (Bradshaw, 2015), and
- collaborating with other organizations to gain knowledge and support to develop programs that improve students' mastery of math skills (Bradshaw, 2015; Capella, 2017).

Bradshaw (2015) and Kraft et al. (2015) indicated that increased planning time may positively affect the quality of training that after-school program staff members and volunteers receive.

After-School Program Planning Frameworks

Program planners develop frameworks of after-school programs and plan strategies to incorporate in the program and its activities (Darling-Hammond, 2015; Penuel et al., 2016). Program planners may use planning principles to correlate learning objectives; build communication between families, communities, and schools; integrate with diverse stakeholder- and community-group members; build student–staff trust; and encourage student involvement in problem-solving (Darling-Hammond, 2015; Penuel et al., 2016). As program planners begin developing the framework for a new after-school program, their first step is to establish a rapport with schools, families, and other school organizations to understand the needs the program must meet (Darling-Hammond, 2015; Penuel et al., 2016). Their next step is to design a program that attracts volunteers from the target population and encourages students to commit to participating in the program (Darling-Hammond, 2015; Penuel et al., 2016). Their final step is to implement a training program for after-school volunteers and staff members geared toward meeting the participants' needs (Darling-Hammond, 2015; Penuel et al., 2016).

More specifically Darling-Hammon (2015) and Tracy et al. (2016) explored the Assessment of Program Practices Tool (APT), which gauged the solidity of Out-of-school-time (OST) youth programs. Darling-Hammon (2015) and Tracy et al. (2016) conducted this research study in two phases to examine visible program outcomes and inclusive staff training to observe program outcomes. Darling-Hammon (2015) and Tracy et al. (2016) explored the impact on student learning when students are exposed to a positive learning environment. The second phase explored the effects of experiencing using positive training engagement with students to explore what may improve

organizational outcomes. Darling-Hammon (2015) and Tracy et al. (2016) found when observations are being conducted the findings between raters varied (Darling-Hammon, 2015; Tracy et al., 2016). In Phase 2, Darling-Hammon (2015) and Tracy et al. (2016) discovered tests and video exams provided as a training tool enhanced student understanding and increased testing scores.

After-School Program Design

Penuel et al. (2016) and Riiser et al. (2017) identified important design principles that improve after-school programs and support student learning needs: coordinating learning goals and resources across environments, collaborating with diverse stakeholders during program development to reduce design bias, assisting students to make connections across their environment, encouraging students to identify with others in the community, and supporting understanding of students' career pathways and educational requirements. Further, Nebel et al. (2016), Penuel et al., and Riiser et al. found that setting specific goals may result in improved program design outcomes compared to not establishing specific design details.

Implementing an After-School Program Design

Implementing an after-school program design is essential to constructing and supporting the program's infrastructure (Penuel et al., 2016; Riiser et al., 2017). A design should include a way to secure adequate materials and resources, guidelines for developing parent–child relationships to foster learning outside the program, and strategies for ways that families can connect with community organizations to identify, create, and support additional opportunities for students (Penuel et al., 2016; Riiser et al., 2017).

Riiser et al. (2017) and Wever Frerichs et al. (2018) examined a professional development plan that demonstrates four principles: iterative training, peer engagement and reflection, applied practice, and development of learning communities. Riiser et al. and Wever Frerichs et al. used a blended learning design, which included iterative in-person training, online lessons, and coaching sessions. During training sessions, staff members actively participate in experiential activities and collaborate with their peers to reflect on the goals of the activities and develop implementation ideas. Wever Frerichs et al. and Riiser et al. posited that leaders may use group meetings, coaching sessions, and continual emphasis on real-world skills application to reinforce learning and encourage youth to practice what they have learned. Wever Frerichs et al. found that programs using the model of real-world skill application demonstrated higher quality learning experiences after implementing the training than those that did not.

Planning Resilience

Conchas et al. (2015) and Woodland (2016) explored resilience as a framework for scrutinizing after-school programs targeting students in low SES communities. Conchas et al. and Woodland described resilience as successful adaptation and achievement despite exposure to adversity. Woodland used the model with staff members to explain the relationship between risks and protective factors in after-school program settings. Woodland focused on students living in low SES communities and examined the presence of many cumulative risk factors, including exposure to violence and poverty and reduced access to quality education.

Conchas et al. (2015) and Woodland (2016) identified general protective factors including parental and caregiver support, neighborhood safety, teacher quality, and self-

esteem; the absence of which acted as risk factors indicating a need for outside intervention. After-school program staff members provided protection, academic support, and social-emotional development (Conchas et al., 2015; Woodland, 2016). The benefits of this type of academic support include reduced exposure to violence by using structured time to increase access to academic and social resources (Conchas et al., 2015; Woodland, 2016). After-school programs promote resilience in low SES communities (Conchas et al., 2015; Woodland, 2016).

Support of Research-Based Practices in After-School Settings

Holstead et al. (2015) and Kremer et al. (2015) found that managers may use research-based practices in after-school programs to support high school students. Holstead et al. and Kremer et al. focused on core research-based areas of high school programming: tutoring, homework assistance, credit recovery, and preparing for college and careers after high school. Holstead et al. and Kremer et al. found that programs often offered research-based activities. Nevertheless, many programs lacked active recruitment and retention strategies, and few allowed students to choose their own direction. Holstead et al. and Kremer et al. indicated that including research-based practices in after-school program instruction may positively impact students' preparation for graduation and college.

Best Practices for After-School Programs

Douglass et al. (2017), Renz (2016), and Vance et al. (2016) demonstrated the importance of identifying best practices for supporting learning in after-school settings. Vance et al. also identified three core design features—practice, reflection, and collaboration—and several other features that changed depending on the program goals.

Douglass et al., Renz, and Vance et al. found that new skills, peers, and staff members could influence students' critical thinking regarding their experiences and engage them with other individuals in the field. Douglass et al., Renz, and Vance et al. tailored several aspects of best practice designs to reaching the goals of an individual program, improving program-specific activities for students in low SES communities, and developing support for program staff. In these best practice designs, leaders and trainers of volunteers use a structured curriculum to develop strategic research-based lessons and activities to improve student performance (Renz, 2016; Vance et al., 2016).

Synthesis

Chapter 2 contains information about what experts believe are optimal practices necessary for volunteers who work in after-school programs helping students understand math concepts. I identified four major themes from the existing literature: (a) volunteerism, (b) volunteer training, (c) after-school program planning, and (d) support of research-based practices in after-school settings.

After-school program leaders often use volunteers to help students needing support (Casto, 2016). Volunteers who lack training in after-school program settings may have fewer opportunities to produce significant improvements in students' academic performance (Casto, 2016; Gross et al., 2015; Kremer et al., 2015; Virginia Department of Education, 2018). After-school volunteers may help students improve performance when given strategies that may enhance the student's comprehension of math applications (Wagner, 2019).

Between 2015 and 2016, 68,000,000 individuals served as volunteers throughout the United States (Bureau of Labor Statistics, 2016). Of these volunteers, 870,000 adults

have provided support to students in after-school programs (Gross et al., 2015). Approximately 25.2% of volunteers have donated time that resulted in improving students' understanding of math concepts and applications (Gross et al., 2015). Follman et al. (2016) found that 50% of after-school programs fail because of a lack of resources and staff training.

Students in low SES communities may benefit from receiving additional support from after-school volunteers (Golan & Ahmad, 2018; Hodges et al., 2017). Nevertheless, volunteers trained to communicate the relevance and application of mathematical concepts to students in after-school program settings could produce positive outcomes. Providing volunteers with strategies to help them convey mathematical concepts in a meaningful and fun way may result in students understanding math and improving in academic performance (Casto, 2016; Gross et al., 2015; Kremer et al., 2015; Wagner, 2019).

Many after-school program leaders recruit volunteers who may be willing to work for various personal reasons. Volunteer services may be a benefit for both the person volunteering as well as the organization. When after-school program leaders use volunteers without developing and implementing training strategies, the results may be adverse outcomes. The success or failure of achieving positive outcomes in after-school programs that use volunteers depends on the level of comprehensive communication between trainers and volunteers (Bradshaw, 2015; Kraft et al., 2015; Vandell & Lao, 2016). Identifying specific training may allow program developers to collect the data needed to implement the necessary resources for improving student support (Bradshaw, 2015; Kraft et al. 2015; Penuel et al., 2016; Vandell & Lao, 2016). Although I conducted

an exhaustive search, I found no evidence in the literature explicitly identifying the training strategies used for training volunteers who work in after-school program settings in low SES communities with 10th-grade math students.

While much research exists on the need for leading and training volunteers regarding improving students understanding on math concepts, math applications, and standardized proficiency scores, I have not found sufficient literature addressing the need to develop critical training strategies for volunteers who work in after-school programs helping 10th-grade math students.

Chapter 3 describes the methods I used in conducting this study. I used a qualitative modified Delphi technique to generate consensus from a group of experts on the topic of Identifying Training Competencies to Enhance Community-Based Program After-School Volunteer Performance, as an alternative to using strict data review and interpretation (as cited in Delbecq et al., 1975).

Additional training that may be needed for volunteers who work with 10th-grade math students and how this intervention may affect math proficiency test scores was discussed at length in the literature. Using Goffman's framing communication theory and iterative communication with a panel of experts to frame and reframe emergent themes and social norms, I focused on understanding volunteer training strategies and their impact in after-school programs with 10th-grade math students.

Chapter 3: Research Method

The purpose of the modified Delphi study was to identify what a group of experts from the Atlantic coastal region of the United States believe are necessary strategies for training volunteers who work with 10th grade algebra students in after-school programs. The findings from this study may prove helpful for those who plan after-school programs in this region and may contribute significantly to social change within organizations with volunteer staff. This chapter includes the research design and rationale, the role of the researcher, the methodology of the study, and issues of trustworthiness.

Research Design and Rationale

Research Question

A single research question guided the study: What math instructional strategies can leaders and trainers of volunteers in after-school programs in low SES communities use to enhance support of volunteers who work in an after-school setting with 10th grade students?

Research Design

Dalkey and Helmer formulated the Delphi method as an interactive process that allows experts to discuss predictions of future events, such as organizational outcomes or the effects of implementing company policies (Hallowell & Gambatese, 2010; Skulmoski & Hartman, 2002). Amos and Pearse (2008) found that using a modified Delphi study allowed them to gain knowledge needed to improve the nature of outcomes in specific fields of study such as forecasting future events when ambiguity was present in a problem. De Vries et al. (2015) discussed positive outcomes of applying the Delphi

design in areas such as medicine, social and environmental studies, and government to determine expert consensus regarding solutions to organizational problems.

Delphi Technique

The conventional Delphi design is an iterative process beginning with open-ended questions that a facilitator distributes to a panel of experts (Donohoe & Needham, 2009). The process offers benefits in researching a topic when insufficient scientific evidence makes using conventional research methods challenging (Hallowell & Gambatese, 2010).

The process is iterative and begins with expert panelists providing their opinions regarding various aspects of open-ended questions (Donohoe & Needham, 2009). The facilitator then uses the panelists' responses to generate a questionnaire, which the facilitator distributes to the same panel of experts. The expert panelists respond to the questionnaire and provide additional comments if needed. The facilitator then compiles and analyzes the data from the expert panelists' responses (Donohoe & Needham, 2009). The facilitator sends the expert panelists the analyzed data, and the panelists either revise or maintain their initial responses to the questionnaire items (Donohoe & Needham, 2009). The facilitator repeats this process until the panelists reach a consensus without any changes to the questions or their responses (Donohoe & Needham, 2009). Finally, the facilitator analyzes the data to determine generalizability of consensus provided by the panel of experts (Skulmoski et al., 2007).

Modified Delphi Technique

Conducting a modified Delphi study may reduce expenses while still obtaining the essential expert consensus in a field (Fisher, 1978; Linstone & Turoff, 2002). A modified Delphi study relies on expert-refined open-ended questionnaire development in

the first round rather than open-ended questions as in the original Delphi approach (Keringer, 1973; Linstone & Turoff, 2002). Linstone and Turoff (2002) found that obtaining group consensus on a questionnaire during the first round reduced time and expenses compared to conducting individual interviews with participants to determine appropriate open-ended questions.

Justification for Using the Modified Delphi Technique

The modified Delphi technique is suitable for this study in that I used expert panelists' feedback to develop the modified instrument to be used in Round 2 during Round 1 by using iterative communication before analyzing the themes and research question. I modified the instrument using expert opinions from Round 2 to reflect a refined set of questions ready for the framing process. I expected expert panelists to frame their responses, and the results of this framing would help me interpret findings from multiple analyzed responses regarding how to lead and train volunteers who work with 10^{th} grade math students in low SES communities. By assessing framing and misframing across emergent themes, I used Goffman's framing communication theory as part of iterative communication with experts. I used modifications from Round 1 to develop the list of questions for Round 2, and I modified the instrument by developing a list of key strategies from results of Round 1 and devising an updated questionnaire. I distributed this updated questionnaire to panelists in Round 2 to reach consensus. I used results from Round 2 to modify the instrument again, which I again distributed to the same panelists to reach final consensus.

Benefits of a Delphi Study

Yousuf (2007) determined that the Delphi technique is a straightforward method of research compared to other research techniques and reduces the risk of communication barriers. Further, Yousuf suggested that the Delphi technique eliminates the need for statistical skills and allows for the anonymity of experts.

Sandrey (2008) articulated further benefits. A properly conducted Delphi study may increase motivation and ownership of the process, increasing the sense of responsibility of a panelist to solve the problem at hand (Sandrey, 2008). Further, a panelist may develop more effective and efficient answers to the questions (Sandrey, 2008).

Role of the Researcher

I have extensive experience leading and training volunteers in low SES communities. My ontology is best explained by a post-positivism view that involves experiences of participants via a deductive worldview. In my role as researcher working with expert panelists, multiple realties were viewed through a particular lens. This may contribute to understanding themes presented during data collection.

As the facilitator and analyst for this modified Delphi study, I have a deductive worldview. I sought information regarding why and how experiences are shared between people. Participants with similarities are grounded in reality-based scenarios instead of previous circumstances, embellishing the basis of post-positivism.

Given that I selected experts from my professional network, I may have professional relationships with the participants. At present, I am employed in a public school system in the Atlantic coastal region of the United States. The probability of my

having a professional relationship with a panelist is reduced via inclusion criteria for participants. To my knowledge, I do not have any direct relationships with panelists selected for this study.

My role as the researcher involved organizing, facilitating, and recording data. My participation in the study was limited to collecting and analyzing raw data to produce insight into the phenomena that was the subject of this study.

My responsibility as the researcher involves reflexivity and systematically assessing my positionality and identity regarding the research. Reflexivity involves self-reflection of biases and theoretical preferences during the process of selection of panelists who participated in this study. During data analysis, I tempered my interpretive authority by systematically acknowledging my natural inclination to view data from a personal perspective. To offset this inclination, I created conditions and processes of dialogic interactions and interpretation that challenged my biases and preferences to ensure rigor during research.

The findings from this modified Delphi study may highlight the role of leaders and trainers in communicating the significance of implementing strategic training programs for volunteers who work with 10th grade math students in after school programs. Another significant finding from this study involves training volunteer workers regarding ways to improve the process of helping students understand math concepts and applications. The implementation of these training strategies may result in improved math proficiency scores among 10th grade math students.

Methodology

Participant Selection Logic

Selecting qualified expert panelists is critical for a Delphi study (Hsu & Sandford, 2007). Kerlinger (1973) and Linstone and Turoff (2002) indicated that targeting experts in the field of interest is essential for collecting data that demonstrate key features of the field. Brady (2015) suggested selecting participants based on knowledge. Conversely, Habibi et al. (2014) indicated that there is no universal approach for selecting participants for a Delphi study.

Sampling Criteria

I used a panel of seven experts located in the Atlantic coastal region of the United States. The panel consisted of:

- a cultural diversity expert who is proficient in working with low SES students,
- a volunteer who currently works in a low SES community after-school program,
- a volunteer after-school program coordinator,
- a volunteer after-school program supervisor,
- a community service manager,
- a volunteer recruiter, and
- a nonprofit district facilitator who has 10 years of experience facilitating low SES after-school programs.

Sampling Methods

Two techniques for selecting participants to serve on a panel are snowball sampling in which prospective participants recommend other possible participants, and

purposive sampling in which prospective participants must meet inclusion and exclusion criteria. For the modified Delphi study, I used purposive sampling to select experts from among a group of professionals, and I used snowball sampling when asking these experts to recommend other experts as potential participants.

The guidelines for conducting a modified Delphi study do not stipulate a minimum number of participants (Habibi et al., 2014; Merlin et al., 2016). I selected seven experts as study participants.

Sampling Procedures

I used three approaches to identify and contact potential participants for the panel. First, I contacted individuals who met the sampling criteria and were listed in the database of a local volunteer network in a public school. Second, I explored LinkedIn, a professional networking website. Third, I relied on after-school program supervisors to relay contact information to prospective participants.

After obtaining approval from Walden University's Institutional Review Board (IRB), I emailed information regarding the study to potential participants. I then contacted participants by phone to introduce myself and obtain their permission to email the details of the study and criteria that must be met for participation (see Appendix A). Prequalifying possible participants allowed me to seek potential participants who met the sampling criteria and determine whether prospective participants are willing to take part. I asked individuals who agreed to participate to respond via email within 7 days by replying "I consent." However, if any of the prequalified participants declined to participate in the study, I immediately ceased contact with them. Participants who

consented to this study completed all three rounds. Once I selected seven participants, I began the study.

During a scheduled phone meeting with each participant, I discussed participant rights, informed consent, and study purpose. The informed consent form included discussion of potential benefits and harm and the right of the participant to stop participating without any consequences. Each participant emailed a consenting response to the invitation email before taking part in the research.

Instrumentation

Each participant received another round of question until the group of experts reached a consensus. The expert panelists selected for this study were in various geographical locations, making a questionnaire most appropriate for data collection. I developed a draft of the first set of questions based on the literature review. During Round 1, I sent participants a set of pertinent questions and evaluated and analyzed their responses. I used this analysis to formulate the questionnaire sent to participants in Round 2. Applying the same process to Round 2 responses, I formulated questions for Round 3. I analyzed the responses from Round 3 to determine the findings of the proposed study, using a 70% baseline to determine the consensus.

Based on the literature review in Chapter 2, I developed an instrument (see Appendix B) in which panelists rated 15 competency items using a 5-point Likert scale: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), and 5 (*strongly agree*). I asked participants to add comments, encouraging thoughtful responses. I allowed each participant to provide a comment of up to 100 characters in length when rating each competency. The purpose of this process was to reduce the risk of one panelist

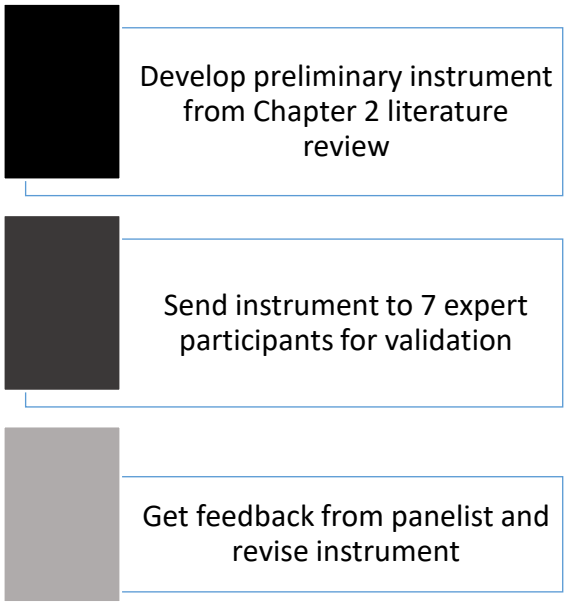
influencing other panelists and allow panelists to freely share their opinions. Figure 3

Instrument Development Process

shows the process used to develop competencies included in the instrument.

Figure 3

Instrument Development Process



I modified or eliminated questionnaire items based on consensus of the expert panel. I used knowledge, skills, and experience to determine vital training competencies for volunteer leaders and trainers. I followed themes discussed in Chapter 2 to develop the initial items: program planning, program development, and volunteer training.

Procedures for Recruitment, Participation, and Data Collection

After obtaining approval from Walden University's IRB (approval #12-16-20-0667919), I sent information regarding the study to potential participants using an individual email to promote anonymity. I also contacted participants by phone to introduce myself and obtain their permission to email the study's details and participation criteria. I asked individuals who agreed to respond via email within 7 days by sending the words "I consent" in a reply email. If any of the prequalified participants decline to participate in the study, I immediately ceased contacting them. Participants who agreed to participant in this study completed all three rounds. Once I selected seven participants, I began the study.

I initially collected data from the group of panelists during the instrument development process. I sent an individual email to each panelist containing a list of questions with instructions to rate competencies using embedded Likert scales and requesting explanatory comments of recommended changes.

I collected and analyzed data concurrently, as per Kerr et al. (2016). Kerr et al. noted that a Delphi study consists of several rounds or iterations, beginning with open-ended questions and ending with a final phase of panel consensus. Although the number of rounds varies from study to study, a typical modified Delphi study involves either two (Maijala et al., 2015; Raley et al., 2016; Rosenthal et al., 2015) or three (Austin et al., 2015; Bahl et al., 2016; Uyei et al., 2015; Van de Ven-Stevens et al., 2015) rounds of data collection. I conducted three rounds of data collection. However, I did not need to incorporate additional rounds as consensus was reached in three rounds (Bahl et al., 2016). I used Prism to analyze and code the expert panelists' questionnaire responses. As

Brady (2015) and de Loë et al. (2016) suggested, I analyzed the data to identify patterns across the responses, which is a technique frequently used when conducting a Delphi study.

To reduce the gap in time between rounds, I began coding and analyzing data provided by each participant upon receipt of their completed questionnaires (Brady, 2015). I made necessary adjustments as remaining panelists submitted their responses to the first round of questions (Brady, 2015). I used Prism (Version X) to create a spreadsheet to organize data by participant, participant-applied code, theme identified by me, and research notes (Brady, 2015). I designed the spreadsheet to include tabs for each of six questions presented in the first round.

Round 1

In Round 1, I sent an email (see Appendix A), questionnaire (see Appendix B), and full study instructions in PDF format. I asked participants to comment and suggest changes. I modified instructions by asking participants to recommend a maximum of three to five changes for each question. I then revised the Round 1 questionnaire and instructions according to recommendations of the participants.

The initial questionnaire included the following open-ended questions generated from the literature review:

1. What may increase the understanding of applying math concepts for volunteers working with 10th-grade students in after-school settings?
2. What may improve collaboration between leaders and trainers of volunteers in low SES community after-school programs?

3. What qualities do after-school volunteers need to display to be viewed as valued participants in low SES community after-school programs?
4. What strategies can volunteers display to students in after-school programs in low SES communities that may enhance students' understanding of 10th-grade math concepts?
5. How can leaders and trainers demonstrate key strategies that will help after-school volunteers communicate, applying 10th-grade math concepts in after-school settings?
6. What strategies have you not included in your answers that you believe after-school volunteers can use to help 10th-grade students in low SES communities improve their understanding of math concepts?

The panelists provided helpful comments and recommendations that were used to clarify the open-ended questionnaire and instructions provided in Round 1 (see Appendix B). I used responses from Round 1 to develop an aggregate list of statements determined by analyzing the answers.

Round 2

In Round 2, I provided each panelist with a list of their key themes combined with key themes from all other panelists in the group. Panelists were asked to rate each item in the list using two separate 5-point Likert scales. The first Likert scale measured desirability and feasibility. The second Likert scale measured the range of feasibility. During Round 2, I used references and definitions that helped to clarify each question. I also included specific instructions requesting that participants elaborate on their answers using a Likert scale to measure desirability of each item in rank order. To develop

consensus in this round, I asked closed questions with Likert-scale responses to rank strategies in order of importance to the panelists. From Round 2 responses, I developed a list of key themes reflecting any consensus that emerged.

Round 3

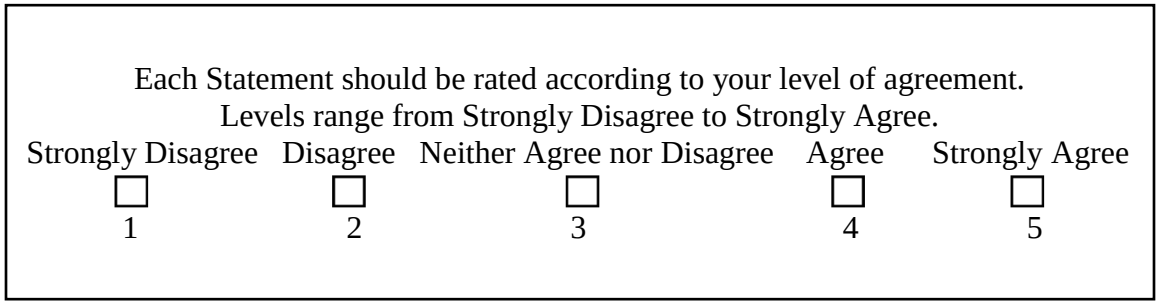
In Round 3, I distributed a questionnaire that was compiled from all items flagged in the answers from Round 2. Panelists rated each statement, as in Round 2, again using two separate 5-point Likert scales that measured the range of importance and the rank of each item. To establish consensus in this later round, I asked closed-ended questions with Likert-scale responses to rank strategies in order of importance to the panelists. I continued the rounds, if necessary, until a clear consensus of strategies emerged.

Participants Provide Ratings

Leaders and trainers of volunteers rated each competency on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) (Eleftheriadou et al., 2015; Pousttchi et al., 2015). See Figure 4 for a representation of this scale.

Figure 4

5-Point Likert Scale



Note. Adapted from V. Eleftheriadou, K. Thomas, N. Geel, I. Hamzavi, H. Lim, T. Suzuki, I. Katayama, T. Anbar, M. Abdallah, Benzekri, L. Gauthier, J. Harris, C.C. de Castro, A. Pandya, B.K. Goh, C. Lan, N. Oiso, N., A. Issa, S. Esmat, and Vitiligo Global Issues Consensus Group, 2015, "Developing core outcome set for vitiligo clinical trials: International e-Delphi consensus," *Pigment Cell & Melanoma Research*, *28*(3), p. 363–369. (https://doi.org/10.1111/pcmr. 12354).

During Round 1 of the Delphi process, participants added competencies to the list. After the panelists completed Round 1, I rated the answers and sent them back to the participants with any additional comments. If the participants were 70% in agreement, I added the new competencies to the list for Round 2. Also, I provided a brief rationale for the rating for each competency. Panelists had 2 weeks to complete and return their responses and comments. I sent two email reminders during these 2 weeks.

The panelists received emails with two documents attached: a list of competencies and a copy of the Likert scale to use throughout the study. I instructed the panelists to review and evaluate the competencies and respond within 2 weeks of receiving the email.

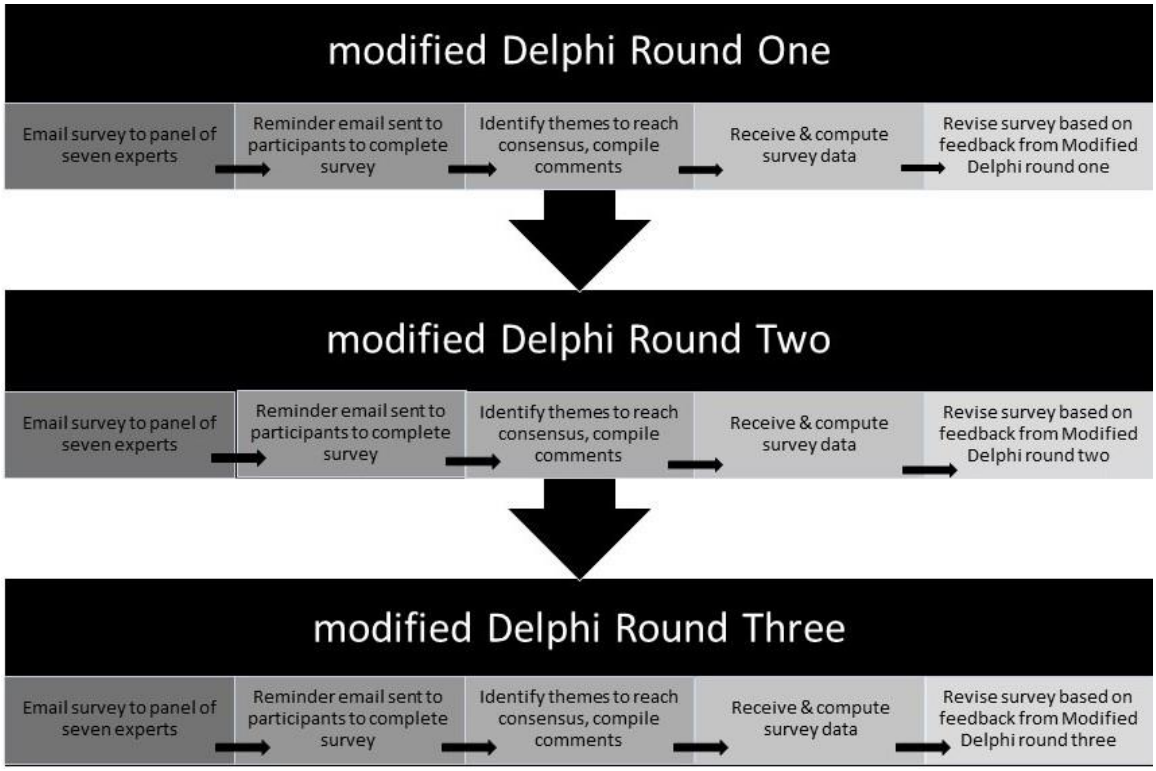
I then analyzed the responses from the panelists and modified the competencies to reflect their input. This process concluded Round 1.

In Round 2, I distributed the modified list of competencies from Round 1 to the panelists for review and comment. I instructed Round 2 participants to review and comment on the instrument and complete the Likert scale attached to the email. I instructed Round 2 panelists to submit their responses within two weeks of receipt of the email. This process concluded Round 2.

In Round 3, I analyzed the responses from the seven panelists in Round 2 and modified the instrument to reflect their input. For the final consensus, I emailed the modified competency instrument to the seven participants who participated in Round 2. This process concluded Round 3. Figure 5 shows the modified Delphi multiround process.

Figure 5

Multiround Development Process



Note. Adapted from H.A. Linstone, and Turoff, M. (Eds.), 2002, *The Delphi method: Techniques and applications*, Reading, Mass.: Addison-Wesley.

Data Analysis Plan

For this modified Delphi study, I used thematic analysis, which is most appropriate when conducting a qualitative study (Braun & Clarke, 2006). Using thematic analysis allows questions to be reworded or reframed in response to discoveries made during the data collection process. Further, thematic analysis provides the ability to conduct continuous rounds until participants reach a consensus. According to Braun and Clarke (2006), thematic analysis is useful for delivering detailed, rich, and descriptive data.

I organized data during the collection phase as well as throughout the study. Further, I reread the questionnaire answers during the coding and analysis phase to assist with the integrity and validity of the study (cited in Maxwell, 2013). After the questionnaire was completed and transcribed, I made copies of each so that the participants could review their responses prior to moving to the analysis phase.

Braun and Clarke (2006) stated that data analysis and the coding process are integral parts of a qualitative study. I developed codes using phrases or words which represent significant meaning. Coding is developed during the inception of the study and includes precoding (Braun & Clarke, 2006). For the study, I used a precoding process to develop the initial interview questions. Cautiously employing precoding keeps researchers from locking into a predetermined code and missing other categories, research developments, or becoming biased (Stangor, 2013). Throughout the study, I continuously developed and refined the codes. This continuous process allowed me to expand and develop themes as necessary.

The expert panelists must reach consensus regarding the competencies, through ranking the list of competencies by using the aforementioned 5-point Likert sale. I used and modified the Likert scale instrument throughout the study, following modified Delphi study guidelines (Miller, 2006; Sandrey, 2008; Scheibe et al., 2002). Ulschak (1983) proposed that a consensus is attained at 80% of participant responses. Donohoe and Needham (2009) stated that 60% participant agreement counts as consensus. Green (1982), Miller (2006), and Rath and Stoyanoff (1983) identified agreement of between 60% and 80% as consensus. For the modified Delphi study, I defined consensus as 70% of panelists.

Issues of Trustworthiness

Reliability

For this modified Delphi study, I followed study protocols that are readily replicable in order to promote reliability. I only presented data collected from particular themes in the study. To increase overall study reliability, I diligently monitored the data to determine how and when this study is replicable, as per Ali and Yusof (2011) and Moustakas (1994).

Fraenkel and Wallen (1996) suggested that study reliability is determined by the consistency of instrument scores when measuring specific data. Fraenkel and Wallen indicated that internal consistency cannot be determined by using the outcomes from conventional means. I used a modified Delphi technique and relied on the responses provided by each participant that changed from one round to another until consensus is reached. Further, I provided each participant with a revised instrument for each round of the study indicating changes from one round to the next, as per Ali and Yusof (2011) and Moustakas (1994) (see Appendix B).

Validity

Following guidance from Skulmoski et al. (2007) and Ulschak (1983), I sought to increase the validity of this study through instrument evaluation by participants who have expert content knowledge of individuals who train or manage volunteers. During this study, I used only individuals identified as volunteer leaders and trainers (cited in Skulmoski et al., 2007; Ulschak, 1983). Considering the qualification of the experts was appropriate for this study's validity.

Ethical Procedures

Participation in this study was voluntary. Participants could end their participation at any time and for any reason. Participants received and replied "I consent" that indicated their agreement to participate in my modified Delphi study as part of fulfilling the requirements of a doctoral degree at Walden University. Participants' responses and identities remained confidential; their responses were shared confidentially among expert particpants to reach a group consensus. Furthermore, except for the data shared with dissertation committee members, I was the only person who accessed the raw data from this research study. No conflicts of interest existed; no outside ethical considerations or incentives for study participation occurred. I included an agreement to gain access to data and participants in the Walden University IRB application. Per Walden University's IRB, data collected for the study was confidential and does not include participant's names or locations. All data for this study is stored securely in a cabinet in my home or is password protected on a computer. The data will be destroyed five years after the dissertation's publication such that written documents will be shredded and electronically stored data will be erased.

Summary

In Chapter 3, I described the purpose of conducting the modified Delphi study and explained how I identified critical competencies for individuals who train or lead volunteers who work in after-school programs with 10th-grade math students. I also included a detailed description of the modified Delphi study process, including participant selection and ethical considerations.

Chapter 4 contains the analysis of the data collected in the three stages of the modified Delphi study. The chapter includes the coding process, identification of themes and similarities in the data, use of software to analyze the data further, and the results.

Chapter 4: Results

The purpose of this modified Delphi study was to establish a consensus among a group of experts to identify strategies and build optimal practices for training volunteers to teach math concepts in after-school settings. The single research question that guided this study was: What math instructional strategies can leaders and trainers in low SES communities use to enhance support of volunteers who work in after-school settings with 10th grade students? Chapter 4 includes the sampling method, procedure for data collection, data analysis, and results. Additionally, I describe the method used to analyze the data and its findings. The data collection timeframe, research setting, participant demographics, and evidence of trustworthiness are also addressed.

Research Setting

The geographic location for this modified Delphi study was the Atlantic Coastal Region of the United States. The target population were leaders and trainers who work with volunteers in after-school programs that help 10th grade students understand math concepts in after-school settings. Research was conducted between December 17, 2020 and January 20, 2021 and data for this study was collected via panelists' electronic participation. Due to the research being conducted via electronic participation, I was unable to observe any organizational or personal conditions that may have influenced participants. I am also unaware of any conditions that may have influenced the interpretation of the results due to participants' organizational or personal experience at the time of the study.

Demographics

I used purposive and snowballing sampling to recruit participants from the Atlantic Coastal Region of the United States. A total of 15 individuals were contacted upon receiving approval to collect data from Walden University IRB on December 16, 2020. Prospective participants were sent individual emails which introduced the basic tenets of the research and purpose of the study. The emails also explained the study's proposed format as well as informed consent and confidentiality. I then called each potential participant, where I introduced the study and obtained their permission to receive a followup email which explained the formal details of the study and criteria to be met for their participation. At that time, I explained the timeline for data collection and informed them that if they declined to participate in the study, I would immediately cease contact with them. Those who agreed to participate were sent individual emails which included the study's intent, a formal invitation to participate, and an electronic consent form. I asked potential participants to read, review, and respond saying "I consent" if they agreed to participate in my study. Aside from their acknowledgment through the informed consent agreement and information obtained from the public school volunteer network database, participants were not asked to disclose any demographic information; hence, no additional demographic data were collected or used in this study (see Table 2). The average years of experience training volunteers for participants in this study was 19. To maintain confidentiality, each participant was assigned a number (P1-P7) used throughout the study.

Table 2

Summary of Participant Demographics

Participant	Age	Highest degree completed	Current position	Experience as a Volunteer Trainer
P1	55	Ph.D.	After-school Coordinator	30 years
P2	58	Ph.D.	After-school Director	28 years
P3	50	Master of Arts	Special Education Supr.	15 years
P4	55	Bachelor of Science	Day & Evening Supr.	11 years
P5	55	Master of Psychology	Juvenile Justice Supr.	21 years
P6	45	Master of Education	After-school Coordinator	10 years
P7	45	Ph.D.	Adjunct Professor	18 years

By December 17, 2020, I had spoken with approximately nine potential participants who met the study's sampling criteria, five of whom were selected through a local volunteer network in a public school database and four of whom were identified through an after-school program's supervisors. These individuals were sent an invitation email (see Appendix A) and a copy of the informed consent form. All nine potential panelists agreed to assist with the study, which exceeded the target panel sizes, assuring compliance with IRB requirements. On December 18, 2020, I received and chose participants who first sent individual emails and said "I consent."

The selected panelists were volunteer leaders and trainers who had at least 10 years of experience working with volunteers in low SES communities in after-school programs. Panelists included a cultural diversity expert who is proficient in working with

low SES community after-school programs, a volunteer who currently works in a low SES community after-school program, a volunteer after-school program coordinator, a volunteer after-school program supervisor, a community service manager, a volunteer recruiter, and a nonprofit district facilitator who has 10 years of experience facilitating low SES after-school programs.

Data Collection

Participation Overview

Although there were nine volunteer leaders and trainers who satisfied research eligibility criteria and agreed to participate in this modified Delphi study, only seven of them participated in all three rounds of the study. For the study, I received a 100% return rate involving three iterations.

Location, Frequency, and Duration of Data Collection

Data collection took place between December 18, 2020 and January 20, 2020. I used three electronic questionnaires in Google Forms to collect data. I sent individual emails to each panelist to begin the questionnaire for the subsequent round of questions. The email included a link that directed the panelists to the questionnaire. Panelists were given 2 weeks per round to complete and submit responses to the questionnaires. Dillman (2000) suggested that researchers provide a reminder correspondence to participants to encourage return of questionnaires. On day seven of the research study, an individual email reminder was sent to panelists who had not submitted a response.

Variations in Data Collection

Some differences exist between the data collection plan outlined in Chapter 3 and the actual data collection process that was used in the study. Chapter 3 indicated that I

would create a spreadsheet using Prism. However, by using Google Forms, I was able to create a Microsoft Excel spreadsheet which interfaced with the data collection tool. Additionally, the research proposed using purposive and snowball sampling to identify potential study panelists. However, after recruiting a sufficient number of panelists using a local volunteer network in a public school database and snowballing sampling to identify panelists through the after-school program, purposeful sampling was not necessary for this study. Although I allotted 3 weeks between questionnaire distribution and data analysis, each round began sooner than forecasted in Chapter 3. Table 3 contains an overview of the data collection timeline for this study. In Chapter 3, I indicated I would obtain a 70% consensus rate for participants. However, in Chapter 4, each topic was rated according to average response from participants, and thus, a mean rating of 3.5 on a 5-point Likert scale implies consensus. A mean of 3.5 or above represents 70% consensus throughout the study.

Table 3

Data Collection Timeline

Event	Start date	End date
Round 1	December 17, 2020	December 26, 2020
Analysis of Round 1 data	December 18, 2020	December 30, 2020
Round 2	December 30, 2020	January 8, 2021
Analysis of Round 2 data	January 4, 2021	January 11, 2021
Round 3	January 11, 2021	January 16, 2021
Analysis of Round 3 data	January 17, 2021	January 22, 2021

Data Analysis Process

Throughout the coding and analysis phase, I consistently reread panelist responses to further validity of the study. Using a Microsoft Excel spreadsheet, I used a tab for each question. After reviewing the data, I began coding each category by delineating similar and different patterns in the data. I collected and analyzed data concurrently while making necessary adjustments as additional data were received. Common phrases and words were identified to develop categories and minimize redundancy. After reviewing and applying a code category to each question response, I combined and adjusted the codes as needed. I then used the Microsoft Excel spreadsheet to compare and contrast panelists' responses and identify patterns across each. Data were then organized by panelist and panelist-applied code, at which time themes were identified from patterns recognized from their words and phrases. The spreadsheet included each question and response. A side-by-side comparison of the spreadsheet was conducted for data accuracy.

Study Results

Round 1

As noted in Chapter 2, the questions provided in Round 1 were based on the literature review and corresponded with the dissertation topic's critical strategies. The questioning strategy used was centered on a questioning technique consisting of open-ended questions. I designed these questions to elicit panelists' opinions about what they considered to be factual statements, which if incorporated into a volunteer training program would be beneficial to helping 10th grade students understand math concepts as they are taught in an after-school program. The following six questions were proposed:

1. What may increase the understanding of applying math concepts for volunteers working with 10th grade students in after-school settings?
2. What may improve collaboration between leaders and trainers of volunteers in low SES community after-school programs?
3. What qualities do after-school volunteers need to display to be viewed as valued participants in low SES community after-school programs?
4. What strategies can volunteers display to students in after-school programs in low-SES communities that may enhance students' understanding of 10th grade math concepts?
5. How can leaders and trainers demonstrate vital strategies to help after-school volunteers communicate, applying 10th grade math concepts in after-school settings?

6. What strategies have you not included in your answers that you believe after-school volunteers can use to help 10th grade students in low SES communities improve their understanding of math concepts?

Question 6 was designed to elicit a richer data set. Data collected in Round 1 was used to provide relevance to the purpose of the study by allowing for convergence of statements that were presented during the Round 2 questionnaire (see Appendix C).

From panelist responses in Round 1, I used thematic analysis to code themes. Table 4 includes themes derived from Round 1 data collection. These themes corresponded to the 10 major themes in the existing literature.

Table 4

Themes Derived from Round 1

Theme I	Communication & Collaboration between Volunteers and Trainers
Theme II	Trust Between Volunteers & Students
Theme III	Understanding Personal Needs of Students
Theme IV	Teaching Pedagogy Using Real World Examples

Using thematic analysis, I developed statements for Round 2 questionnaires (see Appendix D). For example, P4 said "volunteers should include visual demonstrations of the math concepts as well as examples of real-life applicability." P4 also pointed out that it may be helpful when necessary to have volunteers be briefed by faculty regarding basic math skills. P5 suggested that rather than simply demonstrating how something is done, "the biggest thing is helping students realize how learning math benefits them." The consensus from panelists indicated that trust was necessary for effective communication,

and trust became an important theme to be used when solving problems. Communication and collaboration between volunteers and trainers, understanding the personal needs of students, and using teaching pedagogy that uses real-world examples also emerged as themes.

The original questionnaire and instructions were then revised and modified according to suggested recommendations and responses of panelists. Connections between panelist responses were identified, and after removing redundancy, became the modified statements for Round 2 and Round 3. Table 5 depicts statement topics used in the questionnaires (see Appendix D).

Table 5

Round 2 and 3 Statement Topics

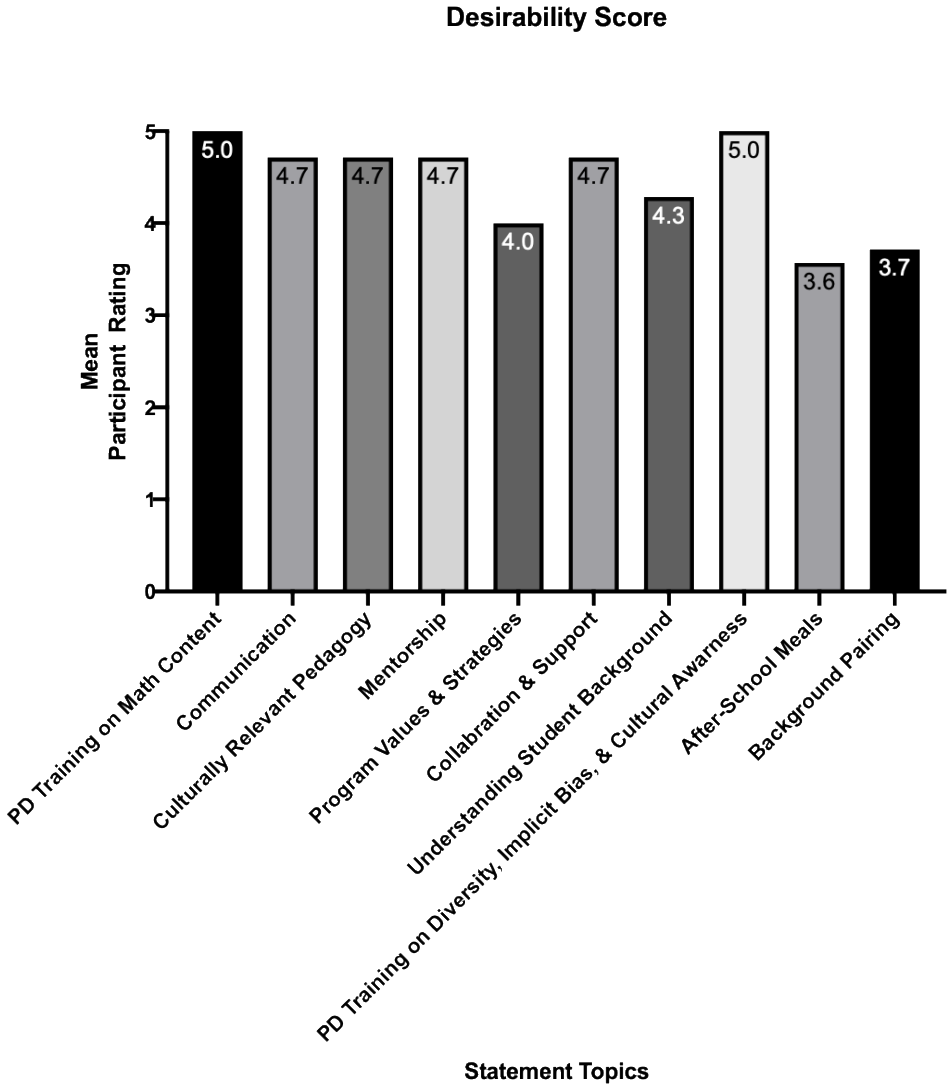
Question 1	PD Training on Math Content
Question 2	Communication
Question 3	Culturally Relevant Pedagogy
Question 4	Mentorship
Question 5	Program Values & Strategies
Question 6	Collaboration & Support
Question 7	Understanding Student Background
Question 8	PD Training on Diversity, implicit Bias, & Cultural Awareness
Question 9	After-School Meals
Question 10	Background Pairing

Round 2

Round 2 consisted of panelists using 5-point Likert scales to rate Round 1 topic statements according to desirability and feasibility to determine panelists' belief in meeting the goals of successfully educating 10th grade students regarding math concepts. Desirability was a measure of how much panelists would like to see statements incorporated into the program. The desirability scale ranged from 1 (*Highly Undesirable*), to 5 (*Highly Desirable*). The mean of 3.5 implies consensus. Each mean was 3.5 or above, representing 70% consensus. The mean ratings for desirability associated with each statement were then calculated and displayed in Figure 6.

Figure 6

Mean Desirability of Each Statement

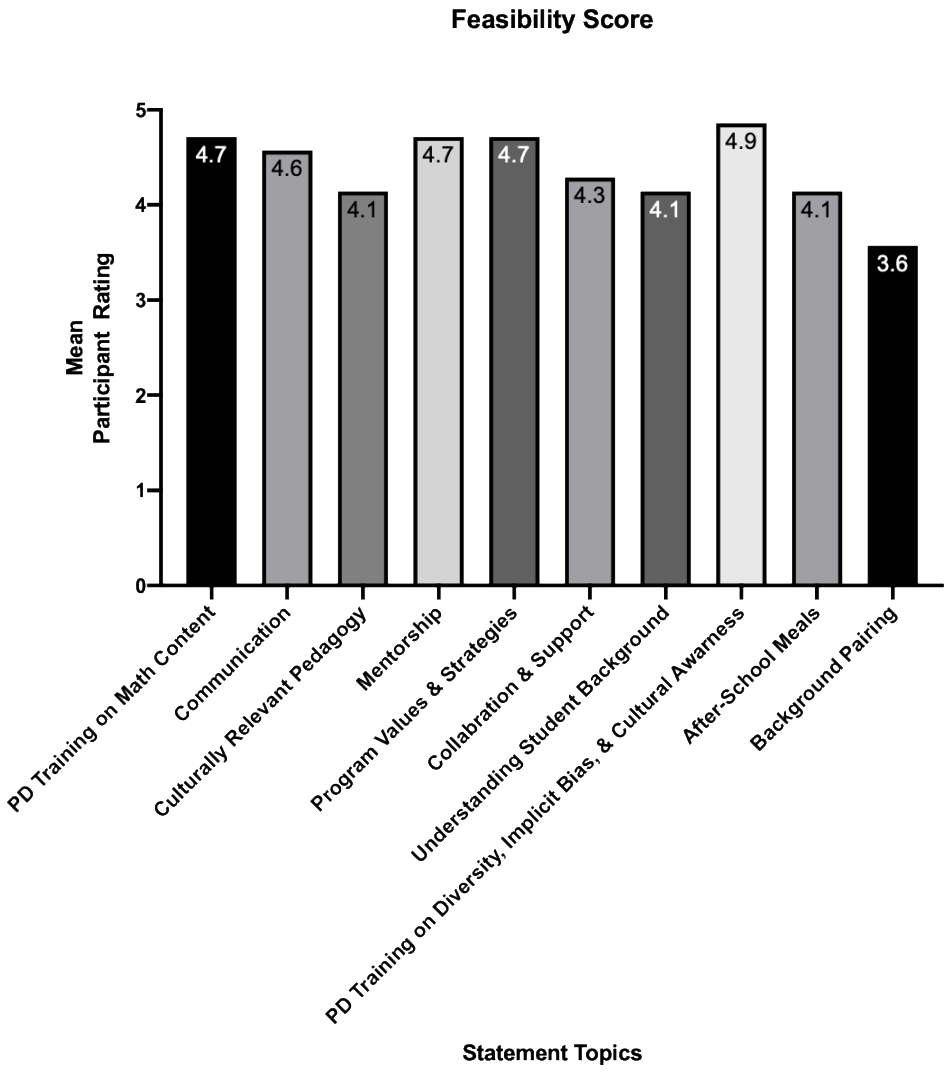


The second 5-point Likert scale measured feasibility, that is, how achievable the implementation of the statement would be. Similar to the desirability scale, the feasibility scale ranged from 1 (*Definitely Infeasible*) to 5 (*Definitely Feasible*). Panelists were provided a list of references and definitions for each statement which allowed them to clarify the meaning of the Desirability and Feasibility scales. Each topic rated for

Feasibility is the average response from participants. A mean of 3.5 implies consensus. As shown in Figure 7, each mean was 3.5 or above representing 70% consensus for each statement.

Figure 7

Mean Feasibility of Each Statement



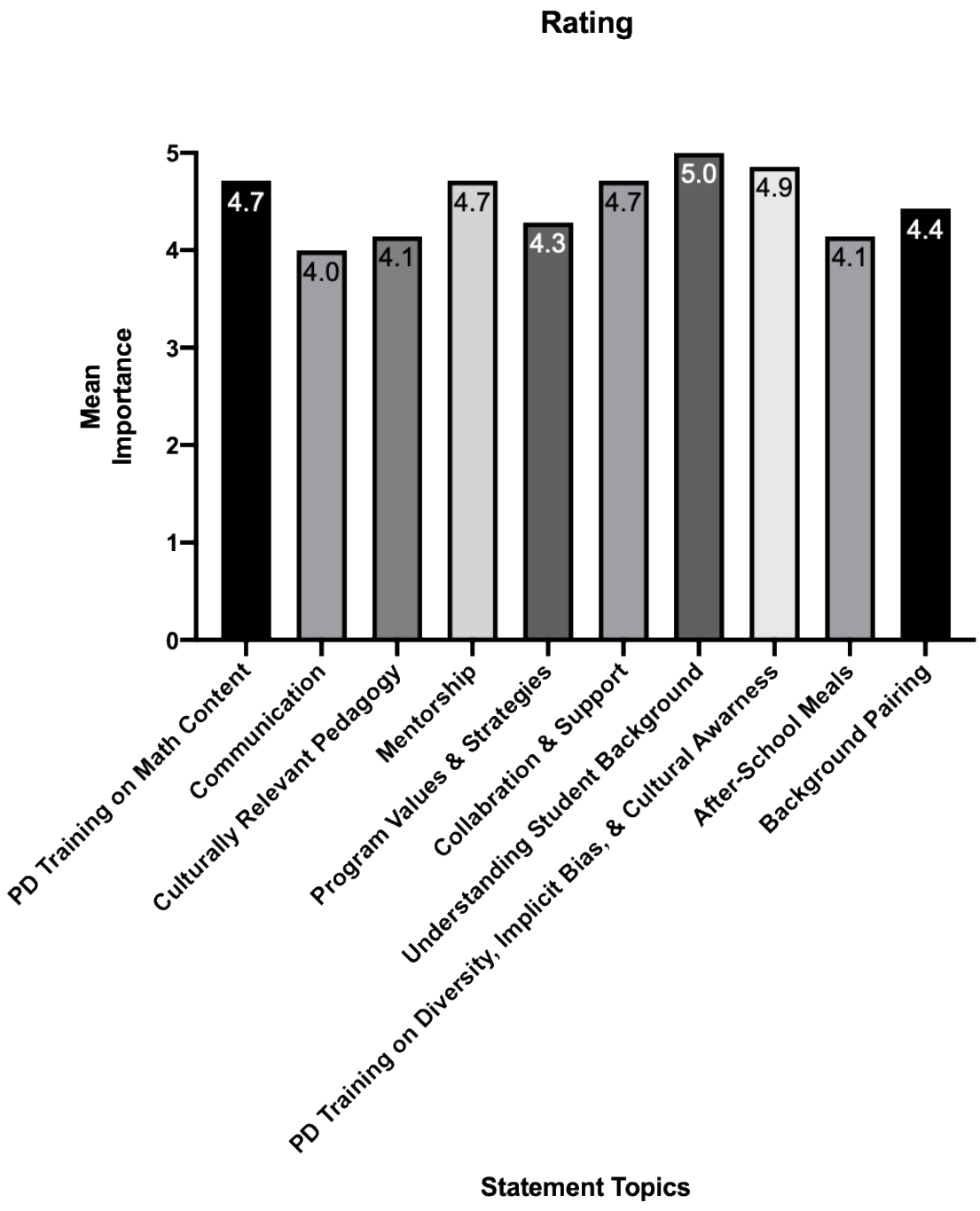
Round 3

In Round 3, the identified statements from Round 2 were carried over to Round 3, and panelists were asked to rate the importance of concentrating volunteer efforts in

each of the 10 statement areas when attempting to successfully educate high school students on math concepts. Panelists rated each statement on a 5-point Likert scale ranging from 1 (*strongly unimportant*) to 5 (*strongly important*). Each topic rated for importance is the average response from participants. The mean of 3.5 implies consensus. Each mean was 3.5 or above representing 70% consensus. Figure 8 gives the mean importance for each statement.

Figure 8

Mean Importance of Each Statement



Panelists were also asked to provide reasons for their ratings of importance. Panelist #1 rated statement number 1 as highly important and states, “In my opinion, integrating math concepts into real-world applications using professional development training is very effective.” Panelist #2 also rated statement #1 as highly important and responded that “Volunteers have to be able to show the math students how math is important in their daily lives or for future endeavors” and also noted that “the training will enable the volunteers to better relate to the math students and show them how to incorporate math into their interactions with the students.” However, Panelist #4 argues that statement #1: “This is important and I didn't rank it highly important because, ideally, the assignments from the classroom teacher will include problems/examples that are already culturally relevant to the student.” Although all experts found question number 1 to be important, the focus of their responses varied from training to program planning. Each topic rated for statement of importance is the average response from participants. The mean of 3.5 implies consensus. Each mean was 3.5 or above representing 70% consensus. Table 6 depicts the statements in order of importance as indicated by the statement mean.

Table 6

Statements Listed in Order of Importance

Statement # from Round 1	Statement Topic	Mean Importance Rating
7	Understanding Student Background	5.0
8	PD Training on Diversity, implicit Bias, & Cultural Awareness	4.9
4	Mentorship	4.7
6	Collaboration & Support	4.7
1	PD Training on Math Content	4.7
10	Background Pairing	4.4
5	Program Values & Strategies	4.3
3	Culturally Relevant Pedagogy	4.1
9	After-School Meals	4.1
2	Communication	4.0

Next, the panelists were asked to provide additional comments on the four emergent themes from Round 1 (see Appendix C). Panelists provided diverse factors important in training volunteers: (a) performance, (b) skills/knowledge, (c) ability, (d) training, and (e) communication/collaboration. P5 states that volunteer performance is important because "it may be difficult if there are minimal volunteers, but it is important to try to have the volunteers relate to the students on a level that brings about trust." P4 states that skills and knowledge can be helpful in allowing for the students to easily connect with a volunteer; however, it is not highly important as individuals from different backgrounds can also connect and learn from each other. P7 indicates that skills and knowledge are

important, stating that “students may build a better working relationship with volunteers that understand them and they can relate to. Students often look for volunteer help when they are more comfortable. It is easier to work with students when they feel like they are having fun and learning at the same time.” P7 indicates “that skills and knowledge are important.” However, P1 suggests “that a volunteer’s ability is not important at all and won’t create diversity during training events.” P3 indicates that ability will assist in rapport building to create positive results in an after-school environment. Finally, P2 and P6 agree that communication and collaboration is important. P2 posits “that students from low SES communities will be more apt to communicate with a volunteer that they feel understands them. It is important that the volunteer lets the student know that they can relate. The volunteer shouldn't be afraid to share knowledge and be willing to learn from the students as well.” P6 states that “students need to be comfortable with and trust volunteers for after-school programs to become successful.”

After I completed the data analysis and conducted a thorough review of data collected in Round 3, consistent data emerged related to interaction between the leaders, trainers, and volunteers. The quality of the program related to personal relationships, confirming the importance of themes: Communications and Collaboration between Leaders and Volunteers, Knowledge of and Training of Volunteers, and Performance Skills and Knowledge of the Volunteers. These themes added to the trustworthiness of this study as they are related to what panelists believed would contribute to positive outcomes and the ultimate goal of the program by providing volunteers with the correct resources to meet those goals. Thus, frequent communication between leaders and trainers and ensuring that feedback was received from volunteers and passed to leaders

through trainers could establish a partnership contributing to reaching the goal of successfully working with low SES students. Last, use of a funneling approach to corroborate statements of each of panelists' themes contributes to the study's trustworthiness.

Evidence of Trustworthiness

Reliability

For this proposed modified Delphi study, I followed study protocols that were replicable in order to promote reliability and only presented data collected from particular themes in the study. As per Fischer (1978) and Linstone and Turoff (2002) suggestions, I diligently monitored the data to determine how and when this study is replicable to increase the study's overall reliability. Fischer (1978) and Linstone and Turoff (2002) suggested that study reliability is determined by consistency of instrument scores when measuring specific data. Fischer (1978) and Linstone and Turoff (2002) also indicated that internal consistency cannot be determined by using the outcomes from conventional means. This modified Delphi technique relied on the responses provided by each panelist funneled into more specific questions or statements presented in Round 2. The process continued until a consensus was reached. Furthermore, I provided each panelist with a revised instrument for each round of the study that indicated changes from one round to the next.

Credibility

Anney (2014), Cho and Lee (2014), and Green (2014) posit that member checking contributes to credibility of a qualitative research study. Noble and Smith (2015) found that member checking allows each participant opportunity to review and comment on the

researcher's data interpretations. For this modified Delphi study, to each panelist I sent an individual email and the Round 2 questionnaire which included the option to comment on each theme. During the data collection process, no panelist challenged themes provided and used for Round 2 or Round 3.

Transferability

Zitomer and Good (2014) indicate that using thick description to represent common strategies will ensure transferability. Anney (2014) found using thick description is a way to explain the process with clarity and detail. Hasson and Keeney (2011) imply that by using thick description the researcher is able to explain each stage of the research process at a glance. I incorporated thick description during each stage of this modified Delphi study process.

Dependability

Establishing dependability can be conducted by code-recode of data collection (Anney, 2014; Berger, 2015). I used the code-recode method during the three-round process. During the collection process, I was able to code-recode data as panelist's submitted data for each round.

Confirmability

According to Hasson and Keeney (2011), an audit trail and thick description is useful for establishing confirmability. For this modified Delphi study, I promoted detailed discussion by allowing panelists opportunity to review other panelists' comments (see Appendix C and Appendix E).

Summary

Chapter 4 outlined results of this modified Delphi research study. A funneling approach was used to determine areas on which expert panelists agreed, thereby identifying areas of focus of leaders and trainers of volunteers of after-school programs. The next chapter will provide an interpretation of findings, limitations of the study, recommendations for those working with this population and conclusions as to what may prove to be beneficial when creating after-school programs for students in lower SES communities.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this modified Delphi study was to identify training competencies believed to be essential for effective after-school volunteers based on the rating of a panel of volunteer leaders and training experts. With this modified Delphi study, I aimed to contribute to those planning after-school programs in the Atlantic Coast Region of the United States and contribute to social change in organizations using volunteer staff to facilitate improvement in math proficiency scores of 10th grade math students. Using a modified Delphi process comprising three iterative rounds, seven after-school volunteer training experts achieved consensus on 10 competencies that are essential for effective after-school volunteer performance.

In this chapter, I interpret findings of the study, discuss possible training strategies for volunteer leaders and trainers and organizations using volunteer staff to facilitate improvement in math proficiency scores of 10th grade math students. I then discuss limitations of the research and make recommendations for future research.

Interpretation of Findings

In this modified Delphi study, I have determined that study findings confirmed that volunteers who are trained to communicate the relevance and application of mathematical concepts to students in after-school program settings could produce positive outcomes. Consensus from panelists indicated that trust was necessary for effective communication and important for problem-solving. Communication and collaboration between volunteers and trainers, understanding the personal needs of students, and using teaching pedagogy that involves real-world examples also emerged as

themes. Expert panelists believe that teaching math concepts using real world examples should be a priority, according to the data collected in Round 1. This finding is corroborated by research. By providing volunteers with strategies to help them convey mathematical concepts in a meaningful and fun way, students may experience positive results in understanding math concepts and improving academic performance.

Students living in low SES communities may look for concrete reasons to stay in school. Students living in low SES communities are often faced with other challenges. Using real-world examples which may help volunteers help the students understand the concepts is related to volunteers understanding the needs of students from lower SES communities as they may be different from students who come from higher SES communities. Volunteers who understand the needs of students growing up in lower SES communities may then understand why it may be difficult for students in those communities to see the usefulness of learning math concepts when they are contending with more important stressors related to surviving their neighborhoods or getting their primary needs met. Volunteers who understand this and who can make math relatable to situations in the students' real world will be able to keep their interest and gain their trust.

Chen (2015) found that the after-school environment had a greater impact on students than the amount of teacher support they experienced during regular class time. After-school volunteers may have more leeway to focus on the whole student and understand their needs better than teachers whose work mandates demand strict adherence to common core teaching standards. Teachers in traditional schools which are located in lower SES communities often feel the pressure to teach to state testing

mandates in order for their schools to keep receiving state funding (Barbarin & Aikens, 2015).

While all statements were rated as desirable by panelists, feasibility ratings reflected limitations of panelists' beliefs in the after-school program's ability to focus on all areas represented by the statements. While at-risk youth in low SES communities may benefit from increased community and volunteer support (Cameron et al., 2015; Swahn & Bossarte, 2009), Adler-Greene (2019) argued that volunteer lack of knowledge and understanding of issues experienced by students living in low SES communities may impact the ability of volunteers to effectively assist students in those communities. Similar to the findings of Devero et al. (2017), Lavigna, (2015), McFadden and Smeaton (2017) and Salamon (2015), panelist statements indicated that not only were volunteers motivated by their commitment, but that their commitment was related to altruism. Altruism builds trust between volunteers and students whom they are attempting to assist. P6 said, "Volunteers need to live a culture of care, and the students need to believe that this culture is authentic." P2 said, "Volunteers need to be honest, compassionate, and authentic. If the student does not believe that the volunteer cares or if the student does not trust the volunteer, it will be very difficult to build a relationship or elicit success."

However, panelists in this research study did not believe that volunteer altruism was enough to overcome the barriers of potential bias that could interfere with their ability to reach and teach lower SES students. Reflecting findings of Hauseman (2016), Nesbit et al. (2018), and Roth and Brooks-Gunn (2015), panelists recognized that the criteria for planning effective after-school programs should include creating a culturally competent agenda and establishing effective communication methods. Programs that

incorporate these criteria in conjunction with rigorous programming evaluation improve academic outcomes for students.

From my study, panelists' comments on environmental influences such as nutrition were consistent with research. Leos-Urbel (2015) found that in low SES communities, explicit after-school program goals and strategies that focus on student health have produced positive outcomes for students. P4 said, "a student's environment can affect their learning. Providing snacks could go a long way to developing trust and belief that volunteers are there to meet their needs."

Interactions of leaders, trainers, and volunteers involved in after-school programs are instrumental to program quality. Huang et al. (2014) used observation and scan methods to identify useful themes related to after-school program productivity by creating checklists that managers or trainers may use as guides for interacting with students. Youth living in low SES communities receive fewer academic resources and support than their peers in higher SES communities (Cameron et al., 2015; Swahn & Bossarte, 2009). Thus, leaders have to spend time interacting with the low SES community (or with those volunteers who do) to get a better understanding of the needs in low SES communities; this understanding will allow them to collaborate more effectively with the trainers of volunteers. Diversity training should be mandatory for leaders and trainers of volunteers as well.

This modified Delphi study involved Goffman's framing communication theory in the interpretation of the study's findings. This study found that panelists stressed the importance of leaders being willing to listen and take advice as well as provide structure for volunteers in after-school programs. Panelists in this study said that effective leaders

are good listeners, seek to understand volunteer views, and can use information provided by volunteers. Therefore, effective leaders who work with trainers of volunteers not only provide guidance, but by being willing to listen and entertain dialogue will be able to effectively share the vision of the organization in ways that transform volunteers and students they serve in positive ways. That transformation would also occur with leaders and trainers as information gathered from volunteers transforms the leaders' and trainers' ways of thinking, learning, and working. However, goals and visions of these leaders need to be guided by integrity and strong ethical values. Volunteers in the after-school program stressed the ethics of viewing students holistically. Having the ethical value to provide students with what they need by meeting them where they are speaks to the integrity that leaders and trainers of the volunteers must have. Both leaders and trainers play a vital role in any form of good leadership in any after-school program. Before a leader can transform others, they must first transform themselves.

The finding on the importance of interaction among leaders, trainers, and volunteers in providing quality programs can be viewed within the context of framing theory, the theoretical foundation which undergirds this study. Panelists recommended that organizational leaders and trainers frame the communication process with volunteers in such a way as to create a two-way process of communication which may help after-school programs meet their goals.

Framing may be a means of characterizing how information is presented to an audience for specific understanding (Dahl, 2009; Goffman, 1997). Goffman (1974) designed the framing process as the method or action shaping or constructing change. Leaders of after-school programs may use framing communication to organize and

structure a particular viewpoint including that of the organization (Johnson & Romney, 2018). Framing communication theory suggests that leader biases may influence the viewpoints of others, which in turn may result in a positive outcome to affect regulatory issues rather than specific topics (Dahl, 2009; Dunn & Eble, 2015; Kádár, 2015). The framing communication process may be used to reduce information complexity by determining what areas of focus are needed and not needed to obtain a specific goal. The framing communication process may also be used as a way of developing a specific guide for information which may guide understanding of information. By listening to volunteers as experts and incorporating some of their ideas, collaboration and communication and trust is thus established, creating a positive working environment for achieving after-school program goals. With regard to training for volunteers, panelists suggested that in-service training should include visual demonstrations of math concepts as well as examples of real-life applicability. Subject matter experts should be employed to ensure that volunteers have basic knowledge of the subject matter and how it is presented to students in the program. This speaks to both themes of knowledge and skill identified by expert panelists. They suggested that leaders must be willing to use all available resources to assist trainers in preparing useful curriculum to reach the population served. In order for volunteers to be knowledgeable and use the skills they have, they also need to maintain two-way communication with trainers. P5 said, "Collaboration is very important to the success of any partnership especially a volunteer/trainer relationship. It gives the volunteers the foundation of the organization's philosophies and ideas." Collaboration should ensure alignment between volunteers and leaders in terms of valuing the needs of students. To assist in the development of

programs, leaders need to provide timely feedback and seek feedback as well. This framing of the communication process can be positive and progressive as well as mentally rewarding. These types of leaders could be considered transformational leaders as they transform the lives of all who are affected by their approach.

Limitations of the Study

Although expert panelists determined by consensus what is essential to developing an effective after-school program that works with lower SES students attempting to learn math concepts, several limitations warrant consideration. First, this study is limited by geography because it only included students from urban after-school programs in the Atlantic Coastal Region of the United States. The sample for this study may or may not be representative of high school students in all urban areas. Therefore, any generalizations from the findings are limited to the subpopulation represented in the sample.

Attrition may occur in the Delphi study process (Annear et al., 2015; Brody et al., 2014). Sinha et al. (2011) said a participant dropping out of a Delphi study where the participant shares the majority opinion may create an artificial consensus, affecting the reliability of the study. Panelists in this modified Delphi study were available for all rounds.

Last, study panelists fit the criteria and were willing to answer questions through all three rounds of the study. They represent a particular segment of the population who were willing to share personal information and take part in a study of this kind through its entirety. The results of this study may not be consistent with data obtained from a different set of panelists.

Recommendations

The single research question that guided this study was: What math instructional strategies can leaders and trainers in low SES communities use to enhance support of volunteers who work in after-school settings with 10th grade students? According to the findings, all panelists agreed that teaching math using strategies that show students how math is used in the real world is vital to students' understanding of math concepts. They also agreed about using professional development training to enhance volunteer understanding of strategies to integrate math concepts into real-world applications. All panelists agreed that this is desirable and feasible. Further, after-school volunteers whose ideas are appreciated and used may provide additional support to students in low SES communities. Organizations who value volunteers' ideas may be able to reach the program's objectives and goals.

As the panelists in this study suggest, central to after-school programming efforts should be the creation of program curricula for volunteers that is the result of a coordinated effort by leaders and trainers to increase the persistence and academic success of students in after-school programs. Panelists suggested that coordinated effort expands the role of the volunteer in shaping the training goals of the program leaders. This concept could be operationalized by coordinating the efforts of all stakeholders (e.g., volunteers, trainers, and leaders responsible for program training). The coordinated team would use the new model to determine prescriptive approaches designed to address math deficits of 10th graders in after-school programs. These efforts would involve using and taking advantage of the distinctive expertise of all team members. The connection among team members could help divide these students into three distinct groups:

- Those whose level of understanding of the math concepts suggests that they on target to complete the program goals,
- Those whose level of understanding of the math concepts somewhat misses, and
- Those students whose level of understanding misses the mark.

A peer teaching model could also be incorporated into the after school-program. This model would use the knowledge of not just volunteers but all who are in the room.

After reviewing data from this modified Delphi study, my recommendations are multifaceted. I suggest that volunteer leaders and trainers develop robust training manuals for 10th grade math students incorporating real-world applications of math concepts. Further, I recommend organizational leaders develop a consistent way of addressing students' needs in a fun and exciting manner. Last, implementing Goffman's communication theory may allow organizational leaders to detect any communication barriers between volunteers and staff. Communicating as a team and implementing consensus among students, trainers, and program developers may increase program success.

Implications

While at-risk youth in low SES communities may benefit from increased community and volunteer support (Cameron et al., 2015; Swahn & Bossarte, 2009), Adler-Greene (2019) argued that lack of knowledge and understanding of issues experienced by students living in low SES communities may impact understanding of volunteers assisting students in these communities. In that same vein, Carr et al. (2015) and Galindo and Sonnenschein (2015) stated that volunteer leaders would benefit from focusing on talent, experience, and knowledge of volunteers they lead; this would include

leaders who wish to improve performance of 10th-grade math students in low SES communities. With increased support provided by leaders, volunteers should gain necessary knowledge and skill to work effectively with students from lower SES backgrounds. The result could be increased respect between leaders and volunteers and the development of positive organizational relationships between volunteers and leaders. The creation of comprehensive and thorough training and evaluation for volunteers working in low SES communities may reverse any negative impacts on organizational outcomes. Identification of new training priorities could decrease volunteer turnover and staff loss and improve productivity in after-school programs.

Conclusions

This study provides insight on the potential effect of changing the focus of training programs designed to increase the understanding of students learning math concepts in after-school programs. Based on this study's findings, I recommend that programs who do not focus on these training areas would benefit from refocusing efforts in addressing academic needs of students in after-school programs in lower SES communities. As a person who has worked with students from lower SES communities, anecdotally, I have witnessed positive effect and a difference in outcomes when students work with volunteers who care.

For after-school programs with this population to be effective, leaders must create a care team made up of stakeholders who are committed to creating an atmosphere that is welcoming and supportive of these students. This action if monitored for quality should decrease instances of volunteer turnover. Leaders' behavior would show how leaders value the people who they are there to assist. Leaders in charge of these programs may

not be ready to exert that level of commitment. However, by encouraging and supporting volunteers who work with these students, leaders may benefit personally through their increased engagement with these students and volunteers who assist them. Recommendations of this study if implemented should have a direct effect on a program's ability to meet its strategic goals through focused interventions to assist these students. These interventions will help students develop self-confidence to complete all levels of education, translating high school learning and other training programs into meaningful employment opportunities.

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Appendix A: Email Invitation

Email Invitation to Participate in the Research Study Titled Identifying Training Competencies to Enhance Community-Based Program After-School Volunteer Performance

Dear volunteer leaders and trainers,

I am conducting a focus group questions as part of a research study to develop critical strategies for volunteers that work in after-school settings helping students understand math concepts.

You are invited to be an expert panelist for a modified Delphi study if you are:

(A) located in the Atlantic Coastal Region of the United States

(B) cultural diversity expert who is proficient in working with low SES students,

(C) volunteer who currently works in a low SES community after-school program,

(D) volunteer after-school program coordinator,

(E) volunteer after-school program supervisor,

(F) community service manager,

(G) volunteer recruiter, and a nonprofit district facilitator who has 10 years of experience facilitating low SES after-school programs

The focus group questions take approximately 3 to 4 weeks and is very informal. I am trying to identify what experts believe are the necessary strategies for training volunteers that help 10th grade algebra students in an after-school program. Your responses to the questions will be kept confidential. Each participant will be assigned a number to help ensure that personal identifiers are not revealed during the analysis and documentation of the research findings. The benefit of this research is that you will be helping to produce knowledge and training tools that may assist individuals that lead or

manage volunteer training by forming the development of training tools. This information should help to better develop a list of strategies for leading and training volunteers, including providing data that may be used subsequently for developing a robust orientation training module for volunteers supporting 10th-grade algebra students who fall below competency levels.

If you are willing to participate and for more information regarding the study, please contact me at (757) 776-3677 or you may reach me by email at: charlene.sanders2@waldenu.edu

Thank you

Charlene Sanders, PhD Candidate

Appendix B: Questionnaire

- What may increase the understanding of applying math concepts for volunteers working with 10th-grade students in after-school settings?
- What may improve collaboration between leaders and trainers of volunteers in low SES community after-school programs?
- What qualities do after-school volunteers need to display to be viewed as valued participants in low SES community after-school programs?
- What strategies can volunteers display to students in after-school programs in low-SES communities that may enhance students' understanding of 10th-grade math concepts?
- How can leaders and trainers demonstrate key strategies that will help after-school volunteers communicate applying 10th-grade math concepts in after-school settings?
- What strategies have you not included in your answers that you believe after-school volunteers can use to help 10th-grade students in low SES communities improve their understanding of math concepts?

Appendix C: Round 1 Summary of Panelist Responses to Questionnaire 1

Panelist	Response	Response	Response	Response
Panelist 1	Communication and positive attitudes toward the intended outcomes	Students will feel more comfortable if they trust the volunteers are in a position to help	The leaders have to spend time interacting with the low SES community in order to get a better understanding of the need in low SES communities prior to collaborating with the trainers of volunteers	Volunteers need to show real-life applicability to enhance students' understanding of 10th grade math concepts
Panelist 2	Open communication in the form of an open-door policy might improve the collaboration between leaders and trainers.	In any relationship, trust is key.	The volunteers need to be seen as caring and having a genuine concern for disadvantaged youth.	Students may not see the function or use of math in their world; therefore, it is important for the volunteer to demonstrate real life application.
Panelist 3	Collaboration is driven by communication. Identifying expectations of volunteers and the trainers as well as goal setting are important.	Must have trust between volunteers and students who come from a low-SES community; trust plays a huge role.	The first thing the volunteers need to do is develop an understanding of each student in the program.	Many students want to be athletes and volunteers need to show that athletes use math even though students may not realize it.
Panelist 4	Tracking goals and expectations with frequent communication between leaders and volunteer trainers.	If the student does not believe that the volunteer cares or if the student does not trust the volunteer, it will be very difficult to build a relationship or illicit success.	Leaders and trainers need to make sure that each student gets a snack or light dinner so that they can focus.	Volunteers should include visual demonstrations of the math concepts as well as examples of real-life applicability.
Panelist 5	A good leader can inspire and motivate through communication.	It is important to build trust and strengthening relationships.	Students are not always willing to say that they need help so it is important that the volunteers' background matches the student.	The biggest thing is helping students realize how learning math benefits them.
Panelist 6	Leaders must develop a strategy, improve culture, and communication.	Leaders must build the trust of the follower to collaborate and reach goals.	After-school volunteers need to be culturally aware and sensitive to the needs of each student in the low SES community.	Connect with students by making learning COOL!
Panelist 7	Clear communication in any leadership style is important and necessary.	Having a clear understanding of expectations also builds the relationship and builds trust.	The volunteers need to relate to the students, even if they come from different backgrounds.	
Emergent Theme from Panelist Responses	Communication & collaboration between volunteers and trainers	Trust between volunteers & students	Understanding personal needs of students	Teaching pedagogy using real world examples

Appendix D: Statements for Round 2 and 3 Questionnaires

1. Enhance volunteer understanding of strategies to integrate math concepts into real-world applications using professional development training.
2. Increase weekly communication between trainers and volunteers is essential for teaching basic math concepts.
3. Expand volunteer's training on culturally relevant pedagogy for designing lesson to incorporate the lived experience of students from low SES communities.
4. Improve after-school collaboration between volunteers and students by conducting weekly mentorship activities that focus on building effective relationships.
5. Have trainers communicate with after-school volunteers their organization's values and strategies for student success utilizing a bi-monthly training schedule.
6. Improve workplace collaboration between volunteers and trainers by fostering positive communication and support tools on a weekly base.
7. Increase volunteer knowledge of different needs of students living in low SES communities face compared to students living in middle to upper class communities.
8. Develop training for volunteers on topics of diversity, implicit bias, and cultural awareness using monthly professional development training.
9. Provide daily meals or snacks for students during after school sessions.
10. Pair volunteers with similar backgrounds or experiences to students in low SES communities.

Appendix E: Round 3 Optional Comments

Participant 5	It may be difficult if there are minimal volunteers, but it is important to try to have the volunteers relate to the students on a level that brings about trust.	Performance
Participant 4	This can be helpful to allow for the students to easily connect with a volunteer, however, it is not highly important as individuals from different backgrounds can also connect and learn from each other.	Skills/Knowledge
Participant 7	Students may build a better working relationship with volunteers that understand them and can they can relate. Students often look for volunteer help when they are more comfortable. It is easier to work with students when they feel like they are having fun and learning at the same time.	Skills/Knowledge
Participant 1	Not important at all and won't create diversity.	Ability
Participant 3	This will assist in the rapport building to create positive results.	Ability
Participant 2	Students from low SES communities will be more apt to communicate with a volunteer that they feel understands them. It is important that the volunteer lets the student know that they can relate. The volunteer shouldn't be afraid to share knowledge and also be willing to learn from the students as well.	Communication/ Collaboration
Participant 6	Students need to be comfortable with and trust volunteers.	Communication/ Collaboration