
Historical Research of Health Education Conference Themes (Part 2) from 2010 to 2019: Three Goals for Teaching Health Education History

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Abstract

Our goal is to increase health education history being taught in the professional preparation curriculum with three objectives for faculty to consider: 1) provide students with contemporary data that describes the mission, vision, and membership numbers of professional organizations so students will become members, attend health education-related conferences, and seek leadership roles in their respective careers; 2) use evidence-based instructional strategies to encourage students to study historical data in context more deeply in order to narrow the knowledge gaps in the profession; and 3) empower students to use the previous 30-year historical timeline of health education conference themes with an additional 10-year timeline shared in this paper to help shape the future of public health and health education. This paper extends a previously published analysis and historical timeline of health education conference themes from 1975 to 2009. In the additional findings related to the decade from 2010 to 2019 shared in this paper, we focus on ways that faculty can employ a fresh pedagogical lens to collaborate with students on historical assignments guided by a constructivist theoretical perspective. Faculty in public health and health education are encouraged to use a constructivist pedagogy that sets the stage for interactive dialogue, multiple perspectives, inquiry-based learning, and critical and creative thinking in the context of history.

Introduction

Story narrative is a key aspect of historical research. Knowing the story of health professionals who gathered to discuss important issues surrounding health inequities, disease prevention, and innovative health solutions remains a key focus in the fields of public health and health education. The American Association for the History of Medicine (Brand, 1964) is a professional association of librarians, archivists, and historians in medicine and allied health fields who work to preserve written narrative records for study about the narrative history of

medicine. One aspirational outcome of this paper is to encourage more historical scholarship in public health and health education as parallel story narratives to collect, retell, and document through its own professional associations and to encourage more historical coursework so entry-level health professionals will embrace individual and collective narratives as foundational to their professional formation and ongoing career development. Individual story narratives help to form a collective history of the profession in a reciprocal way when organizations and

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universities plan coursework and conferences to foster historical inquiry which will help to answer questions of who, what, when, where, and why public health and health education exist today.

Background: A Brief History of Professional Organizations in Public Health and Health Education

The purpose of this section is to provide a brief historical narrative of six professional organizations in public health and health education. This brief historical review also helps to contribute contemporary understanding about the vision, mission, and membership numbers of those organizations (Table 1) and the historical conference themes that emerged from those professional organizations from 2010 to 2019

(Table 2).

The story of health education in relation to the professional organizations began with the founding of the American Public Health Association (APHA) in 1887 by a physician, Dr. Stephen Smith, who was the commissioner of New York City’s Metropolitan Health Board. During a 1927 meeting of APHA in Cincinnati, Ohio, a newly-formed physician group was named the American Association of School Physicians which later became the American School Health Association (ASHA) in 1936. In 2018, ASHA moved its organizational home close to the University of Indiana-Bloomington, having spent many years in Kent, Ohio and Baltimore, Maryland.

In the early 1900’s, universities began to

Table 1

Vision, mission, and membership numbers of health professional organizations

Professional Organization	Vision Statements	Mission Statements	Member Numbers
American Academy of Health Behavior (AAHB)	<p>The American Academy of Health Behavior is a multidisciplinary society of health behavior scholars and researchers with the following objectives:</p> <ol style="list-style-type: none"> 1. Foster development and dissemination of knowledge through sponsorship of scientific meetings, symposia, and publications. 2. Recognize outstanding achievements in the areas of health behavior, health education, or health promotion research. 3. Encourage collaborative research efforts. 4. Influence health policy and allocation of resources within agencies, private foundations, and universities. 5. Foster the research career of young scholars. 6. Create and sustain an environment that is welcoming and inclusive of diversity as reflected in the membership, health behavior issues, approaches and dissemination. 	<p>The American Academy of Health Behavior™ serves as the “research home” for health behavior scholars committed to excellence and diversity in research to improve the public's health.</p>	200

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Table 1 continued

Professional Organization	Vision Statements	Mission Statements	Member Numbers
American Association of Health Education (AAHE)	<p>The American Association for Health Education seeks to:</p> <ol style="list-style-type: none"> 1. Develop and promulgate standards, resources and services regarding health education to professionals and non-professionals. 2. Foster the development of national research priorities in health education and promotion. Provide mechanisms for the translation of theory and research into practice and the translation of practice into theory and research. 3. Facilitate communication among members of the profession, the lay public and other national and international organizations with respect to the philosophic basis and current application of health education principles and practices. 4. Provide technical assistance to legislative and professional bodies engaged in drafting pertinent legislation and related guidelines. 5. Provide leadership in promoting policies and evaluative procedures that will result in effective health education programs. 6. Assist in the development and mobilization of resources for effective health education and promotion. 	<p>The American Association for Health Education advances the profession by serving health educators and other professionals who strive to promote the health of all people. The leaders and members realize the mission through a comprehensive approach which encourages, supports, and assists health professionals concerned with health promotion through education and other systematic strategies. AAHE serves professionals in all settings, such as: health care, community/public agencies, businesses, schools (pre-Kindergarten to 12th grade) and institutions of higher education.</p>	5,500
American Public Health Association (APHA)	<p>The American Public Health Association seeks to create the healthiest nation in one generation.</p>	<p>The American Public Health Association seeks to improve the health of the public and achieve equity in health status.</p>	25,000

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Table 1 continued

Professional Organization	Vision Statements	Mission Statements	Member Numbers
American School Health Association (ASHA)	The American School Health Association envisions healthy students who learn and achieve in safe and healthy environments nurtured by caring adults functioning within coordinated school and community support systems.	The mission of the American School Health Association is to transform all schools into places where every student learns and thrives.	589
Society for Health and Physical Educators (SHAPE America)	The Society for Health and Physical Educators envisions a nation where all children are prepared to lead healthy, physically active lives.	The Society for Health and Physical Educators aims to advance professional practice and promote research related to health and physical education, physical activity, dance and sport.	9,500
Society of Public Health Education (SOPHE)	The Society of Public Health Education vision is: A healthy world through health education.	The Society of Public Health aims to provide global leadership to the profession of health education and health promotion and to promote the health of society.	4,000

Table 2
Health education conference themes from 2010 to 2019

Organization	Year	Theme	Location
American Academy of Health Behavior (AAHB)	2010	Translating Evidence Based on Health Behavior Research to Practice	Clearwater Beach, FL
	2011	The Art & Science of Community Based Participatory Research: Methods Measures, and Evidence for Health Behavior Change	Hilton Head, SC
	2012	Applications of Technology in Health Behavior Research	Austin, TX
	2013	Systems Thinking and Analysis in Health Behavior	Santa Fe, NM
	2014	Environment, Policy, and Behavior Change	Charleston, SC
	2015	Digital Media and Behavior Change	San Antonio, TX
	2016	Using the Past to Propel the Future	Ponte Vedra Beach, FL
	2017	Health Behavior Research in the Age of Personalized Medicine	Tucson, AZ
	2018	An Equity Approach to Health Behavior Innovations	Portland, OR
	2019	Theory and Applications of Multiple Health Behavior Change	Greenville, SC
American Association of Health Education (AAHE)	2010	Strength Through Partnerships	Indianapolis, IN
	2011	Oceans of Opportunity	San Diego, CA
	2012	United We Move	Boston, MA
	2013	Drive Your Future	Charlotte, NC
	2014	Gateway to Success	St. Louis, MO
	2015	Preparing HPE Professionals for 21st Century Schools	Atlanta, GA
	2016	Shaping the Future of Health and Physical Education	Atlantic City, NJ
	2017	New Ideas Take Shape	Boston, MA
	2018	Leverage the Power of Active Educators	Nashville, TN
	2019	Not available	

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Table 2 continued

Organization	Year	Theme	Location
American Public Health Association (APHA)	2010	Social Justice: A Public Health Imperative	Denver, CO
	2011	Healthy Communities Promote Healthy Minds and Bodies	Washington, DC
	2012	Prevention and Wellness Across the Lifespan	San Francisco, CA
	2013	Think Global, Act Local: Best Practices Around the World	Boston, MA
	2014	Healthography: How Where You Live Affects Your Well-being	New Orleans, LA
	2015	Health in All Policies	Chicago, IL
	2016	Creating the Healthiest Nation: Ensuring the Right to Health	Denver, CO
	2017	Creating the Healthiest Nation: Climate Changes Health	Atlanta, GA
	2018	Creating the Healthiest Nation: Health Equity Now	San Diego, CA
	2019	Creating the Healthiest Nation: For Science. For Action. For Health.	Philadelphia, PA
American School Health Association (ASHA)	2010	Healthy Students...Successful Learners	Kansas City, MO
	2011	Limitless Possibilities: School Health in the New Decade	Louisville, KY
	2012	Making Connections: The People. Passion, and Promise of School Health	San Antonio, TX
	2013	Charting a New Course for School Health	Myrtle Beach, SC
	2014	Building Bridges to Action: Supporting School Health	Portland, OR
	2015	Advocacy 101: Going the Distance for School Health	Lake Buena Vista, FL
	2016	Advocacy; Research and Emerging Issues; and Teaching and Learning.	Baltimore, MD
	2017	Foundations: Core Skills Training for Sexuality Education	St. Louis, MO
	2018	The Power of Participation: Enhance Your Membership Experience & Make a Difference	San Diego, CA
2019	Connecting Health and Learning	Cincinnati, OH	
Society of Health and Physical Educators (SHAPE America)	2015	SHAPE America 2015	Seattle, WA
	2016	SHAPE America 2016	Minneapolis, MN
	2017	SHAPE America 2017	Boston, MA
	2018	SHAPE America 2018	Nashville, TN
	2019	SHAPE America 2019	Tampa, FL

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Table 2 continued

Organization	Year	Theme	Location
Society of Public Health Education (SOPHE)	2010	Scaling New Heights in Health Education Leadership: Revisiting Our Past to Inform Our Future	Denver, CO
	2011	Leveraging the Power of Health Education: Changing Systems	Arlington, VA
	2012	Mining Golden Opportunities: Health Education Policy, Research, and Practice	San Francisco, CA
	2013	The Magic of Health Education: Vision, Imagination & Transformation	Orlando, FL
	2014	Discovery 2014: New Health Education Strategies, Connections & Ideas	Baltimore, MD
	2015	Blazing a Trail for Health Education and Health Promotion	Portland, OR
	2016	Building Capital: Investing in the Future of Health Education	Charlotte, NC
	2017	Scaling New Heights: Health for All	Denver, CO
	2018	Igniting Change and Innovation: The Impact of Health Education	Columbus, OH
	2019	Elevating Health Through the Power of Many	Salt Lake City, UT

prepare professionals for careers in public health, but it was not until 1945 that APHA recognized the first universities (n=10) for their graduate programs in public health. APHA carried out accreditation of public health graduate programs until 1974 when an independent organization, the Council on Education for Public Health (CEPH) assumed the task. Headquartered in Silver Springs, Maryland, CEPH is recognized by the U.S. Department of Education for its role in accrediting public health programs at the graduate level, and, in 2014, the undergraduate level (Riegelman, 2008; Riegelman, Albertine, & Wykoff, 2015; Resnick, Leider, & Riegelman, 2018). The National Council for Accreditation of Teacher Education (NCATE) was founded as a non-profit, non-governmental body in 1954 to approve and certify university programs of all education disciplines. By 2016, NCATE disbanded and the Council for the Accreditation of Educator Preparation (CAEP) became the new organization for accrediting universities in educator preparation (Taub, Goekler, Auld,

Birch, Muller, Wengert, & Allegrante, 2014).

The Society of Public Health Education (SOPHE) began in 1950 with a membership requirement of a graduate degree in public health. By 1960, an undergraduate degree and practice experience was acceptable for membership (Riegelman, Albertine, & Wykoff, 2015). SOPHE's mission focuses on, "Supporting leaders in health education and promotion to advance healthy and equitable communities across the globe." The organization promotes the SOPHE History Project which highlights major events and accomplishments between 2000-2015. SOPHE's 4,000 members in the United States and 25 countries work in a variety of professional settings including public K-12 schools, universities, voluntary organizations, health care settings, worksites, and governmental agencies at the local, state, and federal levels.

The former American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) had its early roots in 1885 when William Gilbert Anderson invited a group of

people teaching and coaching gymnastics to New York to discuss instructional methods, apparatus, and measurement approaches which resulted in a collective agreement to meet the following year. When a formal constitution was adopted by the group in 1886, the organization became the American Association for the Advancement of Physical Education (AAAPE) with a focus on coalescing professionals to discuss physical education and promote its inclusion in schools. In 1903, the organization's name was changed to the American Physical Education Association (APEA) followed by another name change in 1937 when APEA became the American Association for Health and Physical Education (AAHPE). The year 1937 also represented the beginning of the American Association for Health Education (AAHE). Means and Nolte (1987) wrote the first 50-year chronology of health education in AAHPERD from 1937 to 1987. Between 1937 and 1974, a growing membership met to discuss professional issues important to health education, physical education, recreation, and dance, which resulted in a collective name change to the American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD). After its name change, AAHPERD became a stand-alone professional organization in 1975 by disassociating from the National Education Association where it was renting office space at its Washington, D.C. headquarters. In 1980, AAHPERD moved its national office to Reston, Virginia. One final name change occurred in 2014 when AAHPERD reorganized to become the Society of Health and Physical Educators (referred to as SHAPE America). During that time, AAHE ceased to exist.

The American Academy of Health Behavior (AAHB) was founded in 1997 to foster "research skill development and research dissemination across health behavior-related disciplines that increases the likelihood of improved translations and evidence-based practice" (McDermott & Glover, 2010, p. 563). Dr. Elbert D. Glover extended invitations to 34 researchers who shared his vision for improving the science

of health behavior research. Eventually, "32 individuals accepted the invitation and formed the body of Founding Members of The Academy" (McDermott & Glover, 2010, p. 564), followed by 18 Charter Members who joined during the subsequent year. As a multidisciplinary society of health behavior scholars and researchers, AAHB hosted its first scientific meeting in 2000 and traditionally meets in venues for scientific plenary sessions rather than larger concurrent sessions. A Research Laureate Medallion has been given annually since 2000 to a highly respected researcher in the field.

Three Objectives for Teaching Health Education History

In this section, we outline three objectives for faculty when teaching health education history. All data in this paper were collected via content reviews of printed conference programs, website searches, and telephone outreach to various professional organizations. Two researchers independently coded and documented the data. Any coding discrepancies were reconciled by a discussion among the researchers, moderated by a graduate student who completed any follow-up research to verify the results.

Objective 1 for Teaching Health Education History

Our first objective was to provide faculty and their students with contemporary data that describes the mission, vision, and membership numbers of professional organizations in health education and public health (Table 1). Faculty should articulate several reasons for belonging to professional organizations and how one or more organizations can meet different professional goals. Faculty can also share stories to elaborate on how conference attendance may help individuals to develop professional identities and reputations and to foster friendships and collegial networks from multiple points of view. These reasons may motivate students to become members, attend health education conferences, and seek leadership roles in their respective careers.

Faculty can use an inquiry-based constructivist framework (Ubbes, Black, & Ausherman, 2009) to ask students a variety of questions to stimulate their reasons for joining a health education organization in order to guide their professional practice. By describing and discussing reasons for joining a professional organization, students can learn to construct a rationale and reinforce a stronger commitment for their professional development in a social learning environment. Because constructivist approaches engage collaborative dialogue and thinking aloud with others (Ubbes, Black, & Ausherman, 2009), faculty can also discuss the role of a professional mentor and the importance of networking at conferences (Henry-Noel, Bishop, Gwede, Petkova, & Szumache, 2019).

Table 1 shows a summary of six professional membership organizations with their respective vision and mission statements including membership numbers. Faculty can ask students to use Table 1 to match their vocational objectives with a professional organization, then discuss or write about how they would request funds to attend one of the conferences to present a paper. Faculty should also discuss possible barriers for attending professional conferences such as challenges related to time, money, geographical locations, and current events.

In the last decade, the costs of attending conferences have skyrocketed which may limit the number of professionals who can afford transportation costs, lodging expenses, meals and incidentals, and conference registration fees. Since the publishing of the first thematic analysis of health conferences (Black & Ubbes, 2009), research and pedagogical strategies are now disseminated through digital webinars, online meetings, and virtual conferences, especially during the coronavirus global pandemic (COVID-19). More online digital formats have helped to reduce costs associated with professional travel, but this change in venue may challenge the viability of professional organizations dependent on income from face-to-face conferences. Online delivery of professional

conferences may also limit the length and depth of informal conversations that colleagues can experience at face-to-face conferences and chance encounters through networking.

Practical changes have occurred in some of the organizations outlined in Table 1. Faculty can summarize patterns and trends from their own experiences describing how health education has changed in the past five to ten years. For example, the American Association for Health Education (AAHE) disbanded in 2015 when the American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) changed its focus and name to the Society for Health and Physical Educators (SHAPE). Whereas in the past when SOPHE and APHA held their conferences over the same week and/or weekend, SOPHE conferences are now offered in the spring and the APHA conferences are offered in the fall. The American School Health Association (ASHA) conference is offered in the summer, and the American Academy of Health Behavior (AAHB) has a typical pattern of spring conferences.

Objective 2 for Teaching Health Education History

Our second objective was to prompt faculty to design course assignments using evidence-based instructional strategies in order to encourage students to study historical data in context more deeply in order to narrow the knowledge gaps in the profession. Students can learn what has happened in the past, examine the data through personal perspectives and collective dialogue, and make contributions to the future of public health and health education. This leads to knowledge that is based more on facts and documented evidence rather than uninformed opinions and conjecture.

The underlying assumptions of this objective are that faculty will remain active in reading the professional literature, attending conferences, and interacting in professional discourse with colleagues of diverse backgrounds. One drawback of professional complacency is a stagnation of innovative pedagogy that may lead to student

apathy (Coffield, 1981). Faculty can use internal questioning to challenge their own socially constructed assumptions about the history of health education and to explore any unexamined perspectives that may have developed from focusing on more contemporary lines of research or inquiry. When faculty are slow to expand their pedagogical options (Coffield, 1981), classroom activities may lack rigor and depth for addressing both personal and public narratives that inform our collective professional practice.

In addition to using the evidence-based instructional strategies shown in Table 3, faculty need to engage students in examining their own sociocultural understandings and personal meaning making about historical events. This requires faculty to acknowledge and give time and space for the stories and theories that naturally weave together to form collective wisdom and shape professional philosophies (Black, Furney, Graf, & Nolte, 2009). Faculty members may have affiliations with one or more professional organizations to better understand teaching and learning among various groups and populations. If faculty do not take time to plan and implement a constructivist pedagogy based on inquiry, collaboration, concepts, and misconceptions, knowledge will lack a scaffolding potential and

fail to stimulate critical and creative thinking among their students as a dynamic framework for teaching and learning (Ubbes, Black, & Ausherman, 2009).

Table 3 includes nine distinct categories of instructional strategies that inform teaching and learning of any discipline. Faculty can use evidence-based instructional strategies (EBIS) to increase educational effect when planning and implementing a workshop, class, or intervention with students or participants in any setting. Based on a meta-analysis of 40 years of educational research, Marzano, Pickering, and Pollock (2001) showed that EBIS will improve learner achievement across all content areas and all ages. Table 3 shows the average effect sizes and percentile gain of learning through the nine different instructional strategies.

To demonstrate how to implement objective 2, we offer classroom applications for each of the evidence-based instructional strategies (EBIS) for faculty to use when investigating historical data with students of public health and health education. For example, in a course on health disparities, faculty can use EBIS #1 to compare and contrast marginalized and oppressed groups from past history in light of contemporary needs and ethical practices. During assigned readings

Table 3
Categories of evidence-based instructional strategies that affect student achievement

Evidence-Based Instructional Strategies (EBIS)	Average	Percentile	Number of Effect Sizes*	Standard Deviation
1. Identifying similarities & differences	1.61	45	31	0.31
2. Summarizing and note taking	1.00	34	179	0.50
3. Reinforcing effort and providing recognition	0.80	29	21	0.35
4. Homework and practice	0.77	28	134	0.36
5. Nonlinguistic representations	0.75	27	246	0.40
6. Cooperative learning	0.73	27	122	0.40
7. Setting objectives and providing feedback	0.61	23	408	0.28
8. Generating and testing hypotheses	0.61	23	63	0.79
9. Questions, cues, and advance organizers	0.59	22	1,251	0.26

and class discussions, faculty can use EBIS #9 to question and cue critical thinking. Some question cues can be:

- Can you please elaborate?
- Tell me more.
- Could you please rephrase that?
- I don't understand your point.
- Could you please give me an example or an analogy to explain that?
- What might be another perspective about this?
- What are you assuming when you say that?
- What role has privilege played in perpetuating health inequities?
- Are there other perspectives that you could consider?
- What social norms can be challenged in this situation?
- What unexamined assumptions have you stated as a fact?
- Where can we go to do a fact check or find additional information on that point?

Classroom dialogue can be a microcosm of a larger macro view of how conference discourse is conducted. Faculty can talk about current issues that have been debated during recent conferences and retell experiences they had during a panel or round table discussion. Students might be asked to craft conference titles after researching and discussing contemporary issues published in professional journals or textbooks. In collaborative teams, faculty and students can help generate new knowledge to move the profession forward in creative ways.

Another suggested practice for student learning within a historical context could include reading the thematic patterns of conference titles for five years or an entire decade then finding primary and secondary sources to substantiate a body of knowledge that informed a conference theme as shown in Table 2. A thematic analytic approach uses real, primary data and employs two questions: 1) what assumptions, if any, do students hold about the topic to be investigated? and 2) what values and life experiences do students have

and to what extent will this information “shape how they read and interpret the data?” (Braun & Clark, 2013). Students can then be shown how to code a small data set in order to generate initial themes, followed by discussing any divergences or gaps, identifying hidden assumptions, and interpreting the thematic analysis.

Students can also be asked to reach beyond their own perspectives by writing mini-research papers to elaborate on a year of health education history or interviewing key leaders in the profession in person or via digital technologies. Students need to learn the limitations of drawing historical conclusions about the profession without knowing all the professional organizations that have formed the development of the professional narrative. Students should also learn the limitations of using a single Google search for determining a creative direction for conference planning. Instead, students need to be encouraged to use multiple academic search engines to uncover historical research in print and electronic forms.

Faculty can develop a stronger repertoire of learning activities by focusing on the intersection between their pedagogical decisions and the missing narratives of some marginalized people in conference programs. People make history and are behind the events, products, and programs of historical progress. Faculty and students can advance many issues of health, identity, and agency which are themes across history. We acknowledge the limitations of historical data in this paper when we provide a list of conference titles without putting the conference in the context of the local community and its citizenry.

Learning can be described as knowing the correct answers, but also knowing how to ask questions through an inquiry-based process that allows for critical, creative, and reflective thinking. The National Research Council (2000) states that “To develop competence in an area of inquiry, students must: (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate

retrieval and application” (p. 16).

So how can faculty engage students to learn, retrieve, and apply historical information through inquiry-based assignments? Faculty can draw upon a constructivist framework to inform their pedagogical decisions. Each of the nine evidence-based instructional strategies (EBIS) can also be defined as pedagogical approaches from Table 3 (Marzano, 2007; Ubbes, 2008) and are organized below with some new inquiry-based assignments for faculty to use with students in their public health and health education courses.

Identify similarities and differences

- Using the historical information presented in Table 1, what similarities and differences exist between two or more professional organizations?
- Which professional organization will you join? What distinguishes that organization from the others you did not choose? Compare your similarities and differences with another colleague by listening deeply.
- How can you use the historical patterns presented in Table 2 to create a metaphor or analogy in identifying overlapping relationships between health organizations?
- How can you use the information in Table 2 to view some of the conference themes through the eyes of impoverished people, through the experiences of marginalized immigrants, or through the life story of veterans?
- What are the epidemiological patterns of Black, Latinx, indigenous, or other people of color in one of the cities where a conference was held over the last five years?
- What is an environmental assessment of a community where a conference was hosted in a region of the country and how did it change during two different years?

Summarize and note taking

- How can you summarize the main ideas, key points, dates, and people who influenced the profession by finding print and electronic resources for one of the ten years?

- How would you summarize the vision and mission statement of a professional organization in order to convince a colleague to join the organization with you?

Reinforce effort and provide recognition

- How could you honor and respect different points of view at a professional conference rather than remaining silent by not engaging in a collaborative conversation?
- Who would you want to recognize as a key leader in a professional organization based on your informed research? What are some key strategies for setting up a safe environment for civil discourse about the topics of missing and marginalized voices (Kendi, 2019)?
- How can your personal experiences be relevant in shaping the culture of conference discourse, and ultimately, give the profession of public health and health education more recognition?
- How would you introduce yourself to a new colleague or a health education leader at a professional conference?

Promote homework and practice

- How would you want to challenge and affect change in the current direction of a professional organization by reading and discussing its historical literature (Heim, 1962; Means, 1975)?
- What are some scripts you can write down and practice in order to reduce your frustrations or defensiveness during verbal conversations in a professional setting?
- How can you use your different points of view to practice professional discourse and resolve conflicts peacefully?
- How would you challenge different points of view by practicing some of the following phrases:
 - I’ve never thought of that perspective. Tell me more.
 - That’s an interesting point of view. I have another one to share.
 - I used to think that way until I considered

how my language was oppressive. Here's the homework I did to refine my language skills that are still in progress.

Use nonlinguistic representations

- How can you use a graphic organizer to highlight common themes across health organizations for a particular year in history?
- What visual representations could be used to capture the essence of a mission or vision statement for one of the professional health organizations?
- What nonlinguistic representation in the form of a graphic organizer or a Thinking Map® (Hyerle, 2008) will help professionals learn public health and health education history?
- How can gestured language and nonverbal communication represent points of view different from your own?
- How does professional dress and personal expression play a role in professional perceptions and potential biases?

Use cooperative learning

- How can we share stories of power and privilege with sensitivity and respect within a small group of peers?
- What evidence exists (or not) that perspectives of age, gender, race, ethnic, and/or socioeconomic voices were included when a professional health organization was established?
- As a small planning group, how can you share alternative perspectives such as abilities, geographies, and language to be developed as an organizing theme in an upcoming conference?
- How can you work alone to investigate one professional organization, then join with one other colleague to plan a presentation at an upcoming conference for that organization?
- As a group, come to a consensus of what is meant by collegiality when working toward a common goal or collective cause?

Set objectives and provide feedback

- What seems missing from the list of health conference titles and themes as evidenced by the current events that were documented for that year or decade?
- What contemporary title would you suggest for an upcoming professional health conference? How can you refine the title based on feedback from others who are from that organization?
- What learning outcomes or take-aways would you expect to gain after attending a professional health conference in a particular location?

Generate and test hypotheses

- How can you use "scholarly databases, library archival sources, books and materials" (Black, 2006) to validate the historical events and themes for one of the six professional organizations in Table 3?
- What historical events could have played a role in developing a conference theme for a particular year? What other themes could have been suggested instead?
- Where would you predict public health and health education to be in another five years or ten years based on history?
- What attitudinal shifts might need to change for these predictions to occur?

Use questions, cues, and advance organizers

- Who are some of the professional leaders who framed the narratives of the conference titles?
- What interview questions would you ask one of the conference leaders?
- In what ways have you or someone you know experienced a professional conversation of privilege and power that marginalized others in the organization?
- What sociohistorical or sociocultural event has influenced your point of view as a health professional?
- In what ways has the health profession missed the mark or failed to be inclusive or aware of differences?
- How could implicit bias and expectations

affect the ability of professionals to change their beliefs and perspectives when interacting with others at a conference presentation?

- How can implicit biases and expectations influence your choice of attending a conference session based on just reading the title?

Objective 3 for Teaching Health Education History

The focus of the third objective is to extend the 30-year historical timeline of health education conference themes (Black & Ubbes, 2009) by ten additional years in this paper. By using a forty-year review, faculty can empower students to collaborate in shaping the future of public health and health education. In Table 2, professional organizations are listed in alphabetical order with the year of their conference, theme of the conference, and location. Students and faculty can engage together in creative conversations to build momentum for change. Because the American Academy of Health Behavior (AAHB) was not included in the original 30-year timeline published by Black and Ubbes (2009), we included the AAHB conference years from 2000 to 2010, plus 2010 to 2019, in this paper. All other organizations listed in Table 2 begin in 2010 and end in 2019. However, the conference transition for SHAPE America began in 2015.

Many students of public health and health education can contribute their words and actions to an important public health cause by joining and participating in professional organizations and attending their conferences. Such action steps move students from the intrapersonal to the interactional components of Zimmerman's model of psychological empowerment (Zimmerman, 1995). Peterson (2014, p. 105) claimed that "Empowerment has the potential to be foundational to our understanding of social change and society's struggle toward greater social and economic justice". These components enable empowered professionals to have critical conversations which may lead to discourse with alternative viewpoints. In 1968, Martin Luther

King stated that "Our lives begin to end the day we are silent about the things that matter" (as cited in Arndt, 2018, p. 1).

Faculty can develop a checklist similar to the one in Figure 1 that demonstrates how students can think about the extent of their professional qualifications as they pursue their academic degrees. The Professional Practices Checklist can serve as an action plan for students to document their skills and accomplishments in a professional portfolio for future employment. The checklist affords students with talking points for interviews and gives faculty feedback on how well students are progressing through their university coursework. As students build their personal and professional narratives, they contribute to the history making of public health and health education.

Faculty should encourage students to conduct a self-analysis of the eight areas of responsibilities in the Health Education Specialist Practice Analysis (HESPA) II framework (Knowlden, Cottrell, Henderson, Allison, Auld, Kusorgbor-Narh, Lysoby, & McKenzie, 2020) to indicate where their current skill level may be (using a Likert scale to indicate poor to excellent) and to justify the basis for their self-ratings. HESPA II is essential for advancing health education in community, corporate, clinical, and classroom settings by helping to differentiate health education from other health-related professions. Faculty can also engage in conversations with students about the six responsibilities listed in the Code of Ethics for the Health Education Profession® (2020).

In conclusion, we focused on three objectives to uncover the past, present, and future directions of public health and health education. Faculty were encouraged to provide students with organizational history from six professional organizations, then use evidence-based instructional strategies when designing learning activities that employed an updated 2009-2019 conference timeline, a summary of professional organizations, and a Professional Practice Checklist for the development of future leaders.

Figure 1

Example of a professional practices checklist

Professional Practices Checklist	
Directions: Please provide documented evidence of your Professional Practices this semester. Put an "X" by any professional practices you demonstrated this semester inside or outside of class. Submit this form electronically on Final Exam day with documented information typed in for each entry: what, where, when, and with whom you accomplished these practices.	
<input type="checkbox"/>	I have presented at a professional conference this semester or in the last six months.
<input type="checkbox"/>	I attended a professional workshop, seminar, conference, or meeting to improve my background knowledge and skills in health promotion.
<input type="checkbox"/>	I have registered to sit for the Certified Health Education Specialist® exam upon graduation following the guidelines provided on the National Commission for Health Education Credentialing (NCHEC) website for senior-status students.
<input type="checkbox"/>	I have joined a professional organization this semester and/or have maintained my professional membership.
<input type="checkbox"/>	I am currently enrolled in a health-related internship or have had an internship in the last six months.
<input type="checkbox"/>	I read and discussed a minimum of one health-related journal article or book chapter per week to increase my awareness of the health education field.
<input type="checkbox"/>	I contributed to the health education profession by announcing a health-related event in the local area and then served as a "go to" person for my colleagues with detailed information and follow up.
<input type="checkbox"/>	I am currently a member of an honorary group or membership on campus to increase my awareness of health-related issues among my peers.
<input type="checkbox"/>	I have met with my advisor EACH semester in the last year to ensure I have the latest information on courses, changes in the health education or public health program, upcoming scholarships, and faculty research.
<input type="checkbox"/>	I attended a cultural event in the area to become more informed about a health-related topic from the viewpoints of gender, race, ethnicity, language, abilities, socioeconomic status, and/or sexual orientation.
<input type="checkbox"/>	I submitted my resume to a faculty member in order to practice my interview skills and focus my career interests in health education and public health.
<input type="checkbox"/>	I have sought out and contributed to a research project of one of my professors (or developed an interest of my own through an independent study or capstone course while being guided by a faculty member).
<input type="checkbox"/>	Other:
Your professional practices above are indicators of your responsibilities and competencies in health education, which may lead you to become a Certified Health Education Specialist (CHES). Please continue to represent yourself well in a professional learning community for the rest of your career.	

Faculty who use inquiry-based approaches to encourage their students to question assumptions and elaborate on historical narratives may find ways to give students more voice in professional discourse and build safe classroom environments for learning. Professionals in public health and health education can help to close historical gaps and open inclusive practices by shifting their thinking and attitudes toward empowerment models. More emphasis needs to be placed on knowing the history of public health and health education in order to recognize and embrace the full range of ideas and perspectives that continues to establish our profession today.

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References

- Arndt, S. (2018). Foreword. *Hastings Women's Law Journal*, 29(1), 1. <https://repository.uchastings.edu/hwlj/vol29/iss1/1>.
- Black, J.M., Furney, S.R., Graf, H.M. & Nolte, A.E. (2009). *Philosophical foundations of health education*. San Francisco, CA: Jossey-Bass.
- Black, J.M. & Ubbes, V.A. (2009). Historical research: A thematic analysis of convention and conference themes for selected professional health education associations from 1975 to 2009. *The International Electronic Journal of Health Education*, 12, 33-47.
- Black, J.M. (2006). Approaches and resources for examining the history of health education. *Health Education Monographs*, 23(1), 1-6.
- Brand, J.L. (1964). American Association for the History of Medicine. *Science*, 145(3629), 302–303. <http://www.jstor.org/stable/1714007>.
- Braun, V. & Clark, V. (2013). *Successful qualitative research: A practical guide for beginners*. London: Sage.
- Code of Ethics for the Health Education Profession®. (2020). Coalition for National Health Education Organizations (CNHEO). [Document]. <http://cnheo.org/ethics-of-the-profession.html>
- Coffield, K. E. (1981). Student apathy: A comparative study. *Teaching of Psychology*, 8(1), 26-28. https://doi.org/10.1207/s15328023top0801_7.
- Hein, F.V. (1962). A history of health education in the United States. *JAMA*, 182(11), 1139. <https://doi.org/10.1001/jama.1962.03050500071030>.
- Henry-Noel, N., Bishop, M., Gwede, C.K., Petkova, E., & Szumache (2019). Mentorship in medicine and other health professions. *Journal of Cancer Education*, 34, 629–637. <https://doi.org/10.1007/s13187-018-1360-6>.
- Hyerle, D. (2008). Thinking Maps®: A visual language for learning. In: Okada A., Shum S.B., Sherborne T. (eds), *Knowledge cartography: Advanced information and knowledge processing*. London: Springer.
- Kendi, I.X. (2019). *How to be an antiracist*. New York: One World.
- Knowlden, A.P., Cottrell, R.R., Henderson, J., Allison, K., Auld, M.E., Kusorgbor-Narh, C.S., Lysoby, L., & McKenzie, J.F. (2020). Health Education Specialist Practice Analysis II 2020: Processes and outcomes. *Health Education & Behavior*, 47(4), 642-651. <https://doi.org/10.1177/1090198120926923>
- Marzano, R.J. (2007). *The art and science of teaching: A comprehensive framework for effective instruction*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Marzano, R.J., Pickering, D.J. & Pollock, J.E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement*. Alexandria,

- VA: Association for Supervision and Curriculum Development.
- McDermott, R.J., & Glover, E.D. (2010). Formation and early history of the American Academy of Health Behavior. *American Journal of Health Behavior*, 34(5), 563-572. <https://doi.org/10.5993/ajhb.34.5.6>.
- Means, R.K. & Nolte, A.E. (1987). Fifty years of health education in AAHPERD: A chronology, 1937-1987. *Health Education*, 18(1), 21-36. <https://doi.org/10.1080/00970050.1987.10615994>.
- Means, R.K. (1975). *Historical perspectives on school health*. Thorofare, NJ: Charles B. Slack.
- National Research Council. (2000). *How people learn: Brain, mind, experience, and school: Expanded edition*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9853>.
- National Commission for Health Education Credentialing, Inc. & Society for Public Health Education, Inc. (2020). *A competency-based framework for health education specialists – 2020*.
- Peterson, N.A. (2014). Empowerment theory: Clarifying the nature of higher-order multidimensional constructs. *American Journal of Community Psychology*, 53, 96–108. <https://doi.org/10.1007/s10464-013-9624-0>.
- Resnik, B., Leider, J.P., & Riegelman, R. (2018). The landscape of U.S. undergraduate public health education. *Public Health Reports*, 133(5), 619-628. <https://doi.org/10.1177/0033354918784911>.
- Riegelman, R.K. (2008). Undergraduate public health education: Past, present, and future. *American Journal of Preventive Medicine*, 35, 258–63. <https://doi.org/10.1016/j.amepre.2008.06.008>.
- Riegelman, R.K., Albertine, S., & Wykoff, R. (2015). History of undergraduate education for public health: From behind the scenes to center stage. *Front Public Health*, 3, 70. <https://doi.org/10.3389/fpubh.2015.00070>.
- Taub, A, Goekler, S., Auld, E.M., Birch, D.A., Muller, S., Wengert, D., & Allegrante, J.P. (2014). Accreditation of professional preparation programs for school health educators: The changing landscape. *Health Education & Behavior*, 41(4), 349–358. <https://doi.org/10.1177/1090198114539686>.
- Ubbes, V.A., Black, J.M., & Ausherman, J.A. (2009). Teaching for understanding in health education: The role of critical and creative thinking skills within constructivism theory. In Black, J.M., Furney, S.R., Graf, H.M. & Nolte, A.E. (Eds.). *Philosophical foundations of health education*. San Francisco, CA: Jossey-Bass, p. 95-108.
- Ubbes, V.A. (2008). *Educating for health: Inquiry-based approaches for preK-8 pedagogy*. Champaign, IL: Human Kinetics.
- Zimmerman, M.A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology*, 23, 581–600. <https://doi.org/10.1007/BF02506983>.

Integrating Group Review Instruction (GRI) into an Undergraduate Public Health Biostatistics Course

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Abstract

Group Review Instruction (GRI) is a peer-led form of additional course instruction and academic support offered to students; it is similar to Supplemental Instruction (SI), traditionally used in scientifically or mathematically rigorous courses. Some studies provide evidence of how supplemental instruction improves grades and reduces failure rates. The application of GRI to fields such as public health and health education is yet to be examined. This article outlines an example of how GRI was integrated into a public health biostatistics course (PBH 299). It presents the logistics involved in the identification of student need; the training and incentive of the review instructor; communication between the faculty member and the review instructor; preparation of review session materials; and implementation of the group review offering.

Introduction

Supplemental Instruction (SI) is a popular form of peer-led group review sessions implemented to assist students in being successful in historically difficult university classes (Blanc et al., 1983; Ogden et al., 2003). Such classes are defined as “high risk” with an average failure rate of ~30% - 40% (Dawson et al., 2014). The initial development of SI occurred in 1963 at the University of Missouri – Kansas City to combat high attrition rates for courses taught within the schools of medicine, pharmacy, and dentistry (Widmar, 1994). SI session styles vary between subjects and institutions (Lockie et al., 2013; Forester et al., 2004; Ogden et al., 2003) and are most popular in introductory science, technology, engineering, and mathematics (STEM) courses that include large amounts of

weekly readings, heavily weighted exams, and large class sizes (Arendale, 1994; Dawson et al., 2014; Rabitoy et al., 2015).

Research suggests SI participation is positively correlated with improved grades and negatively correlated with failure and withdrawal rates of students enrolled in high-risk university classes (Dawson et al., 2014; Hensen & Shelley, 2003; Kenney & Kallison Jr, 1994; Santee & Garavalia, 2006). At the University of North Carolina Wilmington (UNCW), SI has been offered in biology, chemistry, computer science, economics, finance, and nursing courses (UNCW University Learning Center, n.d.). Currently, there appears to be no current SI, group review instruction (GRI), or nontraditional tutoring programs established for undergraduate public

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health courses in North Carolina. This conclusion was drawn following a review of SI and other peer-led nontraditional tutoring program offerings at Council on Education for Public Health (CEPH)-accredited public health programs at North Carolina universities (Appalachian State University Student Learning Center, n.d.; East Carolina University Pirate Academic Success Center, n.d.; The Learning Center University of North Carolina Chapel Hill, n.d.; University of North Carolina Charlotte University Center for Academic Excellence, n.d.; University of North Carolina Greensboro Academic Achievement Center, n.d.; University of North Carolina Wilmington University Learning Center, n.d.). The use of instruction similar to SI in undergraduate Public Health programs may improve student comprehension of National Commission for Health Education Credentialing, Inc. (NCHEC, 2020) competencies (specifically NCHEC Competency 4.4: Interpret data) and CEPH domains (specifically Domain 1: The concepts and applications of basic statistics) (Council on Education for Public Health, 2018). Furthermore, SI-like instruction may enhance understanding of math literacy for students and improve instructor leadership skills (Kenney & Kallison Jr, 1994; Lockie & Van Lanen, 2008).

The key component of SI programs is the utilization of students teaching students through direct instruction, homework assistance, and refined study methods (Blanc et al., 1983; Ogden et al., 2003). By experiencing peer interactions, students can communicate in more relatable terms, thus allowing them to grasp an improved understanding of potentially difficult class material.

SI is often a formalized system set up for a number of different, challenging courses on college campuses. This paper outlines how to set up group review instruction (GRI) for an undergraduate public health biostatistics course (PBH 299). The phrase "group review" was adopted for this form of instruction and study based on titles held at a previous university by the first group review instructor for biostatistics

at UNCW. The biostatistics GRI program did not receive direct assistance from any official SI resources on campus; specifically, the biostatistics GRI program was not funded by the university or included in the university's SI model. Instead, the biostatistics GRI program compensates its instructors with course credit approved by the Director of the UNCW School of Health and Applied Human Sciences (SHAHS), which is the school in which the Public Health program is housed.

Methods

This section discusses how GRI was utilized in an undergraduate public health biostatistics course (PBH 299). Specifically, the following steps outline the logistics involved in identifying the need; providing an incentive to and training the review instructor; communication between the faculty member and the review instructor; preparation of review session materials; and implementation of the group review offering.

Needs Assessment

The first step to establishing GRI is to identify a need or desire for it from the students and/or faculty member. Assessing needs is common and valued in a variety of disciplines, including health education (Gilmore, 2011). One criterion used for supplemental instruction in introductory courses is withdrawal rates greater than 30% or a high number of D or F grades in the class (Congos & Schoeps, 1993; Dawson et al, 2014). Students may also request supplemental instruction based on exposure from previous courses. Additionally, assessing capacity is key in health education, such as assessing the competence and suitability of instructors (McKenzie et al., 2016).

There is evidence that SI is valuable in mathematics courses. Altomare and Moreno-Gongora (2018), at the University of Houston-Downtown (UHD), conducted a study on SI in two accelerated general education or developmental education (DE) math courses to determine SI's impact on grade performance. Explicitly analyzing an Intermediate Algebra

course, the authors identified SI participants on the criteria that the students attended at least one review session over the span of the semester. A chi-square analysis on attendance records and the pass rates for two semesters (Fall 2016 and Spring 2017) was conducted and yielded a significant positive relationship between SI participation and passing grade performance. This data supports Allen et al.'s (2021) claims that SI attendance was positively associated with improved grades and retention rates.

The motivation for implementing group review instruction in a public health course was based on the faculty member's personal experience working with a former biostatistics student who had served as a SI instructor at a previous institution. The faculty member was unable to monetarily compensate the student to be a group review (GR) instructor, but was able to provide the instructor with directed independent study (DIS) course credit, which was graded like a class at the end of the semester.

Determining Roles and Responsibilities for GR Instructor and Faculty Member

Once demand has been established, the faculty member should develop a list of roles and responsibilities for the future GR instructor and themselves. A GR instructor and faculty member should establish a weekly meeting time to discuss materials. Instructional materials produced by the GR instructor (frequently vetted by the faculty member) are utilized in group review sessions held weekly (or bi-weekly) outside of original instruction time. These materials can be completed through the development of multimedia presentations, worksheets, or applied learning activities (see Appendices A, B, and C for three examples).

An example of a teaching technique used by a previous biostatistics GR instructor to facilitate student engagement and enhance learning outcomes was to complete a "brain dump" activity with students during the week of an exam (Appendix A). This kind of activity is similar to a "mind dump," as espoused by Dr. Linda Nilson

(2013), former Director of the Office of Teaching Effectiveness at Clemson University. The activity consists of students being put into small groups within GRI sessions and assigned a unit or chapter. Each group compiles a list of formulas and fundamental information for each unit or section, respectively. The idea of a "mind dump" (Nilson, 2013) is for students to write down as much information as they can recall from class resources such as readings or videos. The groups then present the synthesized information on a whiteboard. Once all units or chapters are on the whiteboard, the instructor reviews the material and provides feedback on the students' output. Finally, the students compile all the information onto a blank sheet of paper.

According to Nilson (2013), the "mind dump" approach allows students to practice the retrieval of information that they have learned. The GR instructor advises the students to rewrite the notes multiple times, adding, editing, and removing materials as they see fit through their individual studying. After multiple revisions, the student is prepared to reproduce the same notes on a blank sheet of paper during the proctored exam.

Aside from review sessions, a GR instructor should actively communicate (e.g., via email) with students, including answering questions, reminding students of upcoming review sessions, and distributing review materials. Hassini (2006) has written about using email (specifically email lists) as a tool to improve instruction. Given the GR instructor's peer connection to the GRI participants, the instructor serves as a liaison between the participants and the faculty member and can offer insight into the needs and perceived performance of individual students. The GR instructor was not privy to any grades earned by students but could get a sense of the performance of students during review sessions by how they answered questions and solved practice problems. The faculty lead would ideally gauge the GR instructor's perception of student performance in the course, as the instructor is a liaison between the class and faculty member.

Identify Student for GR Instructor

The ideal student GR instructor demonstrates strong academic performance, leadership, oral presentation, verbal communication, and analytical skills. The first GR instructor for biostatistics was a student who had earned an A in the class and also had extensive supplemental instruction experience at a previous institution. The student was already familiar with the SI/GRI role and contributed to the design of the GRI for the biostatistics class. If a faculty member teaching biostatistics does not have such a student available, then there are a number of criteria that can be used to help the faculty member identify a suitable GR instructor. A former student who has done well academically (received an A) in similar and/or rigorous science or math courses could be a candidate; one could also ask fellow faculty for recommendations of who might be a good fit. Additionally, it is valuable to find a student who has potential with respect to teaching skills, such as the ability to break down difficult concepts and use interpersonal skills to communicate with peers. Another option is to have a student teach in an "audition" so that the faculty member can observe firsthand how the student explains concepts.

The second semester GRI services were offered in biostatistics, the original GR instructor referred the faculty member to a student who had performed well in the faculty member's biostatistics course. This type of referral system may serve as a way to identify future GR instructors. A final consideration for identifying a GR instructor is availability of the instructor the following semester (in person or virtually) to serve as a mentor for the incoming GR instructor. The GR instructor for the biostatistics class in Spring 2020 was able to communicate readily with the GR instructor from Fall 2019 about group review session logistics, worksheets, and other topics.

Train GR Instructor

After selecting a student to perform the role of GR instructor, the faculty member and

student must collaborate for trainings and regular meetings. Prior to the implementation of the first group review session, the new GR instructor should examine the previous GR instructor's group review binder, which contains activities for group review sessions, previous tests, and study materials that were created for the students. The previous GR instructor can serve as a resource for the newly appointed GR instructor, offering guidance when applicable.

To ensure consistent performance from the GR instructor, a weekly review of activity worksheets should occur with the supervising faculty member. The GR instructor and supervising faculty member should discuss the intended activity and potentially difficult class concepts. Weekly meetings may occur in person, by telephone, through online video communication platforms, or via online chat or email. The GR instructor has the opportunity to ask for guidance from the supervising faculty member on a range of topics including leadership strategies, course material, preferred communication methods with students, and student class performance (although GR instructors do not have access to student grades). Furthermore, Zerger et al. (2006) note how weekly meetings between a faculty member and an SI leader can yield benefit for the faculty member; they propose that a faculty member has the potential to learn teaching methods or techniques from the SI leader. Also, the authors mention that the faculty member and SI leader can share feedback with one another about student progress and challenges. In a sense, faculty can learn and recognize from SI leaders how to best reach students and be accessible to them (Zerger et al., 2006).

Implementation

Because the GRI position would be a new form of nontraditional tutoring offered in the course, it is recommended to include a small write-up in the course syllabus (Appendix D). The text could consist of a description of the GRI program, potential benefits, and proposed activities in addition to the name and preferred contact

information of the GR instructor. Given that this position includes extensive contact between the GR instructor and students, the GR instructor should be available for an introduction during the first day of class. Moreover, the GR instructor is encouraged to attend the majority, if not all, class sessions throughout the semester. This practice is also supported by SI programs accredited through the International Center for Supplemental Instruction, which requires SI Leaders to attend a minimum of 60% of all regularly scheduled class sessions (The International Center for Supplemental Instruction, 2021). This ensures the GR instructor is an accessible resource and familiar with the class material.

Following the first class, the GR instructor should distribute a survey with possible days and times for future group review sessions; this can be completed through Google Survey, Survey Monkey, or Doodle Poll, etc. From experience and due to logistics, such as room reservations and drop/add, the first GRI session is typically held two to three weeks after the first day of class. After the final survey results are analyzed, and the most requested day and time slot(s) are selected, the GR instructor or faculty member should reserve a classroom with a weekly standing reservation for the remainder of the semester. After room confirmation, the GR instructor should publicize that information to the students, to include a weekly or bi-weekly reminder of where and when sessions are held. In previous semesters, a running attendance log of GRI session participants was beneficial to the instructor and faculty member. Because the faculty member did not provide any kind of credit for review session attendance, it was beneficial for her to know which students took advantage of this review opportunity.

Evaluation of GRI Program

Due to the significant interruption of higher education academic programs associated with the Coronavirus-19 (COVID-19) pandemic (Masri & Sabzalieva, 2020; Neuwirth et al, 2020), we were unable to conduct a formal evaluation of the

impact of the GRI program. To provide context, the biostatistics course was abruptly transitioned from a face-to-face to an online delivery mode mid-semester in Spring 2020 (Neuwirth et al., 2020). This circumstance created a major barrier for conducting an evaluation. This substantial change in delivery format, coupled with the ramp-down of non-essential and non-COVID-19 related research on our university's campus created a challenging environment for moving forward with an evaluation. There is a plethora of literature indicating that research in academic settings has been disrupted and slowed by the COVID-19 pandemic (Coleman et al., 2020; Neuwirth et al., 2020; Radecki & Schonfeld, 2020). Considering these extenuating circumstances, we offer evaluative suggestions for future consideration, including anonymous student satisfaction surveys at various points of the semester. The survey would include feedback and suggestions for improvement and could be supported by semi-structured interviews.

Students should be given the opportunity to respond with open- and closed-ended questions (University of Wisconsin – Madison, 2021) to assess the following: student satisfaction with GRI services (with Likert-type items), perceived strengths of GRI services offered, and motivation(s) for participating in group review sessions. Texas State University's (TX State) Student Learning Assistance Center has a robust accredited SI program that collects SI evaluation data from students (The International Center for SI, 2021a). Quantitative and qualitative student data are collected every semester to evaluate SI instruction and student outcomes. Similar to TX State's SI program, we encourage collecting demographic information such as age, gender, race, and ethnicity to assess for differences in student outcomes. These findings can offer important insights that may be used to improve future programming.

Other student data such as actual attendance for group review sessions, regular class attendance, and letter grades could help determine how attendance influences grade achievement.

In a recent SI evaluation study conducted by Allen et al. (2021), SI attendance was positively and significantly associated with students' grades and retention, controlling for measures of student ability, achievement, motivation, and demographic factors. Furthermore, perfect attendance at SI sessions was associated with increases in students' grade percentages by up to 10.4%. Students who attended all SI sessions were also 10% more likely to pass their courses.

The GR instructor's performance with assigned duties should also be evaluated, particularly if the instructor is receiving academic credit for a directed independent study. Similar to how UNC Wilmington faculty are periodically observed for their teaching (UNCW Faculty Handbook, 2019), the faculty member should consider conducting periodic observations to assess the GR instructor's effectiveness in facilitating a review session. Observations should provide the basis of formative and summative evaluation feedback for the GR instructor and be considered in conjunction with student survey feedback.

It would also be useful for the faculty member to conduct an exit interview with the GR instructor to better understand the instructor's experiences. The GR instructor can offer valuable insights about the strengths and limitations of the current program, including practical, constructive advice for orienting and training future GR instructors. Also, the authors recommend for the GR instructor and faculty member to keep detailed field notes about what appears to be working well and challenges throughout the semester. These notes could be shared/compared throughout the semester to help inform instruction and future programming efforts.

Future studies could potentially utilize a quasi-experimental evaluation design (post-test only) to compare students' overall performance in a public health course that utilizes group review instruction (intervention group) and another section of the same course that does not utilize group review instruction (comparison group). These data could provide valuable insight about

the potential effectiveness of GR instruction for student learning in public health courses. Both sections should ideally have the same instructor of record to limit the possibility of instructor grading as a confounding variable, though this may not be possible. The International Center for Supplemental Instruction (2021b) requires programs to utilize a quasi-experimental evaluation design with students' final grades as the outcome measure. Further, these accredited programs must demonstrate that SI group students earn, on average, half to a full letter grade higher than students in the non-SI group. The frequency with which students earn a letter grade of D, or F, or withdraw (DFW rate) must differ between the SI and non-SI group.

Conclusion

Integrating GRI into an undergraduate public health biostatistics course is a unique opportunity for both faculty members and students alike. Aside from the nontraditional or additional tutoring services that it provides, the GRI program allows undergraduate leaders who assume the GR instructor position a chance to develop their own instructional pedagogy with the mentorship of a faculty member. Furthermore, the use of GRI in undergraduate public health programs may offer an opportunity for enhanced student comprehension of NCHCEC competencies and CEPH public health domains, an increased understanding of biostatistical literacy for students, and improved leadership skills among undergraduate GR instructors.

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References

- Allen, P. J., Freitas, S., Marriott, R. J., Pereira, R. M., Williams, C., Cunningham, C. J., & Fletcher, D. (2021). Evaluating the effectiveness of supplemental instruction

- using a multivariable analytic approach. *Learning and Instruction*, 75, 101481.
- Altomare, T. K., & Moreno-Gongora, A. N. (2018). The role and impact of supplemental instruction in accelerated developmental math courses. *Journal of College Academic Support Programs*, 1(1), 19-24.
- Appalachian State University Student Learning Center. (n.d.). *Small group tutoring*. Retrieved July 20, 2021, from <https://studentlearningcenter.appstate.edu/students/tutoring-support-services/small-group-tutoring>
- Arendale, D. R. (1994). Understanding the supplemental instruction model. *New Directions for Teaching and Learning*, 60, 11-21. <https://doi.org/10.1002/tl.37219946004>
- Blanc, R. A., DeBuhr, L. E., & Martin, D. C. (1983). Breaking the attrition cycle: The effects of supplemental instruction on undergraduate performance and attrition. *The Journal of Higher Education*, 54(1), 80-90. <https://doi.org/10.2307/1981646>
- Coleman, B. C., Kean, J., Brandt, C. A., Peduzzi, P., Kerns, R. D., on behalf of the NIH-DoD-VA Pain Management Collaboratory. (2020). Adapting to disruption of research during the COVID-19 pandemic while testing nonpharmacological approaches to pain management. *Translational Behavioral Medicine*, 10(4), 827-834. <https://doi.org/10.1093/tbm/ibaa074>
- Congos, D. H., & Schoeps, N. (1993). Does supplemental instruction really work and what is it anyway? *Studies in Higher Education*, 18(2), 165-77. <https://doi.org/10.1080/03075079312331382349>
- Council on Education for Public Health. (2021). *Accreditation criteria: Standalone Baccalaureate Programs* (March 19, 2021 red line version for 2018 SBP Criteria). Retrieved July 20, 2021, from https://media.ceph.org/documents/2018_SBPcriteria.redline.3.19.21.pdf
- Dawson, P., Meer, J. V., Skalicky, J., & Cowley, K. (2014). On the effectiveness of supplemental instruction. *Review of Educational Research*, 84(4), 609-639. <https://doi.org/10.3102/0034654314540007>
- East Carolina University Pirate Academic Success Center. (n.d.). Current course offerings | Pirate Academic Success Center | ECU. Retrieved July 20, 2021, from <https://pasc.ecu.edu/current-course-offerings/>
- Forester, J. P., Thomas, P. P., & McWhorter, D. L. (2004). Effects of four supplemental instruction programs on students' learning of gross anatomy. *Clinical Anatomy*, 17(4), 322-327. <https://doi.org/10.1002/ca.10219>
- Gilmore, G. D. (2012). *Needs and capacity assessment strategies for health education and health promotion* (4th ed.). Jones & Bartlett.
- Hassini, E. (2006). Student-instructor communication: The role of email. *Computers & Education*, 47(1), 29-40. <https://doi.org/10.1016/j.compedu.2004.08.014>
- Hensen, K.A., & Shelley, M.C. (2003). The impact of supplemental instruction: Results from a large, public, midwestern university. *Journal of College Student Development*, 44(2), 250-259. <https://doi.org/10.1353/csd.2003.0015>
- Kenney, P. A., & Kallison Jr, J. M. (1994). Research studies on the effectiveness of supplemental instruction in mathematics. *New Directions for Teaching and Learning*, 1994(60), 75-82. <https://doi.org/10.1002/tl.37219946010>
- Lockie, N. M., & Van Lanen, R. J. (2008). Impact of the supplemental instruction experience on science SI leaders. *Journal of Developmental Education*, 31(3), 2.
- Lockie, N. M., Van Lanen, R. J., & McGannon, T. (2013). Educational implications of nursing students' learning styles, success in chemistry, and supplemental instruction

- participation on National Council Licensure Examination-Registered Nurses Performance. *Journal of Professional Nursing*, 29(1), 49-58. <https://doi.org/10.1016/j.profnurs.2012.04.003>
- Masri, A. E. & Sabzalieva, E. (2020). Dealing with disruption, rethinking recovery: Policy responses to the COVID-19 pandemic in higher education. *Policy Design and Practice*, 3(3), 312-333. <https://doi.org/10.1080/25741292.2020.1813359>
- McKenzie, J. F., Neiger, B. L., & Thackeray, R. (2012). *Planning, implementing and evaluating health promotion programs: A primer* (6th ed.). Benjamin Cummings.
- National Commission for Health Education Credentialing, Inc. (2020). *Areas of responsibility, competencies and sub-competencies for health education specialist practice analysis II 2020* (HESPA II 2020). Retrieved July 20, 2021 from https://assets.speakcdn.com/assets/2251/hespa_competencies_and_sub-competencies.pdf
- Neuwirth, L. S., Jović, S., & Mukherji, B. R. (2020). Reimagining higher education during and post-COVID-19: Challenges and opportunities. *Journal of Adult and Continuing Education*, 27(2), 141-156. <https://doi.org/10.1177/1477971420947738>
- Nilson, L. B. (2013). *Creating self-regulated learners: Strategies to strengthen students' self-awareness and learning skills*. Stylus.
- Ogden, P., Thompson, D., Russell, A., & Simons, C. (2003). Supplemental instruction: Short- and long-term impact. *Journal of Developmental Education*, 26(3), 2.
- Rabito, E. R., Hoffman, J. L., & Person, D. R. (2015). Supplemental instruction: The effect of demographic and academic preparation variables on community college student academic achievement in STEM-related fields. *Journal of Hispanic Higher Education*, 14(3), 240-255. <https://doi.org/10.1177/1538192714568808>
- Radecki, J. & Schonfeld, R. (2020). *The impacts of COVID-19 on the research enterprise: A landscape review*. Ithaka S+R. Retrieved July 20, 2021 from <https://apo.org.au/sites/default/files/resource-files/2020-10/apo-nid309096.pdf>
- Santee, J., & Garavalia, L. (2006). Peer tutoring programs in health professions schools. *American Journal of Pharmaceutical Education*, 70(3), 70. <https://doi.org/10.5688/aj700370>
- Texas State University. (n.d). *SI Statistics: Student Learning Assistance Center: Texas State University*. Retrieved July 20, 2021, from <https://www.txstate.edu/slac/suppinst/si-statistics.html>
- The International Center for SI. (n.d.). *Accredited programs | The International Center for SI | All Accredited Programs in the United States*. Retrieved July 20, 2021, from <https://info.umkc.edu/si/accredited-programs/>
- The International Center for SI. (n.d.b). *Accreditation | The International Center for SI | Accreditation Overview*. Retrieved July 20, 2021, from <https://info.umkc.edu/si/accreditation/>
- The Learning Center University of North Carolina at Chapel Hill. (n.d.). *Peer tutoring by appointment | Learning Center*. Retrieved July 20, 2021, from <https://learningcenter.unc.edu/appointment-peer-tutoring/>
- UNCW Faculty Handbook. (2019). Retrieved July 20, 2021, from https://uncw.edu/facsen/documents/faculty_handbook.pdf
- University of North Carolina Charlotte University Center for Academic Excellence. (n.d.). *Peer assisted learning (PAL) schedule | University Center for Academic Excellence | UNC Charlotte*. Retrieved July 20, 2021, from <https://ucae.uncc.edu/academic-support-services/pal-schedule>

- University of North Carolina Greensboro
Division of Student Success. (n.d.).
Supplemental instruction schedule –
Division of Student Success. Retrieved July
20, 2021, from [https://success.uncg.edu/
departments/aac/si/sip-schedule/](https://success.uncg.edu/departments/aac/si/sip-schedule/)
- University of North Carolina Wilmington
University Learning Center. (n.d.).
Supported Courses: University Learning
Center: UNCW: Supplemental instruction.
Retrieved July 20, 2021, from [https://uncw.
edu/ulc/services/si/index.html](https://uncw.edu/ulc/services/si/index.html)
- University of Wisconsin – Madison. (n.d.). Best
practices and sample questions for course
evaluation surveys – student learning
assessment. Retrieved July 20, 2021, from
[https://assessment.provost.wisc.edu/best-
practices-and-sample-questions-for-course-
evaluation-surveys/](https://assessment.provost.wisc.edu/best-practices-and-sample-questions-for-course-evaluation-surveys/)
- Widmar, G. E. (1994). Supplemental instruction:
From small beginnings to a national
program. *New Directions for Teaching and
Learning*, 60, 3-10. [https://doi.org/10.1002/
tl.37219946003](https://doi.org/10.1002/tl.37219946003)
- Zerger, S., Clark-Unite C., & Smith, L. (2006).
How supplemental instruction benefits
faculty, administration, and institutions.
New Directions for Teaching and Learning,
2006(106), 63-72. [https://doi.org/10.1002/
tl.234](https://doi.org/10.1002/tl.234)

Appendix A
Activity Name: "Brain or Mind" Dump

Objective: Students will be able to:

- Recall as much synthesized important information (e.g., concepts, rules, and formulas) on a blank sheet of paper in 5 minutes or less.

Supplies: *Group Review Instructor:*

- List of biostatistical concepts, rules, and formulas related to current unit material
- White board
- Whiteboard markers
- Stopwatch

Students:

- Writing utensil
- Blank sheet of paper

Directions: *Before Group Review Instruction Session:*

1. GRI will compile a list of biostatistical concepts, rules, and formulas related to current unit material.
2. GRI will create an example "Brain" or "Mind" Dump to present to the students.

During Group Review Instruction Session:

1. GRI will present their example and explain the benefit of the "Brain" or "Mind" Dump (recall as much synthesized important information about certain topics in a short amount of time before an assessment).
2. GRI will split the students into groups. GRI will instruct the groups to work together to recall as much information as they can on a blank sheet of paper in 5 minutes or less.
 - GRI can assign each group a specific unit/concept if there is a large amount of material.
3. GRI starts timer (5 minutes), and each group begins collaborating on filling up their blank sheet of paper.
4. GRI calls time and instructs the group to elect a member to come up to the white board and write out what their group recalled.
5. GRI will review each group's "Brain" or "Mind" Dump – pointing out common themes and filling in gaps when necessary. The GRI will review and highlight which information the students identified to be the most challenging or hard to recall.
6. GRI will encourage students to practice creating their own "Brain" or "Mind" Dump independently.

Study Designs exposure → outcome (smoking) → (lung cancer) ↳ risk factors ↳ associated w/ exposure ↳ confounder ↳ outcome	Observational ↳ Case-Series Study ↳ Cross-Sectional ↳ Case-Control ↳ Cohort Study	Experimental ↳ Randomized Controlled Trial ↳ Crossover Trial	Descriptive vs. Inferential Descriptive ↳ describe what is going on about pop around study example Inferential ↳ generalization about pop based on data in sample	Prevalence: portion of risk factor/disease ↳ specific point in time Point Prevalence: # of persons w/ dis ↳ examined @ baseline	Incidence: # of new cases ↳ period of time Cumulative # of cases dev. during incidence: specific time ↳ # of persons @ baseline Incidence: # of cases dev. during rate: specific time ↳ sum of lengths of time during which persons are disease free	Risk: PP, CI, IR, PP, CI, IR, unexposed Diff:	Relative Risk: PP or CI exposed ↳ PP or CI unexposed ↳ If RR is 2 = 2x effect Odds & Odds Ratios	Odds: Prevalence ↳ Prevalence ↳ Odds Ratio ↳ Outcome Status Exposure Status <table border="1" data-bbox="1220 1086 1316 1265"> <tr> <td>+</td> <td>a</td> <td>b</td> </tr> <tr> <td>-</td> <td>c</td> <td>d</td> </tr> </table> $(a/b) / (c/d)$	+	a	b	-	c	d	Types of Variables Dichotomous ↳ a possible resp. C/T yes/no Categorical ↳ a resp. NOT ordered (base) Ordinal ↳ a resp. ordered (pain scale) Continuous ↳ OO [BP]	Probability ↳ Likelihood an event will happen ↳ 0 to 1 or 0% to 100%	Normal Distribution Curve ↳ bell curve ↳ Middle value has higher probability ↳ High and low outliers ↳ Low and high outliers ↳ No outliers ↳ outliers use Mean & std dev. ↳ outliers use Median & IQR	Population (unknown info) → More info about pop → Sample
+	a	b																
-	c	d																

UNIT 1 BRAIN DUMP

Appendix B
Activity Name: Kahoot®

- Objective:** Students will be able to:
- Use Kahoot®, a digital game-based learning platform (<https://kahoot.com>), to solve biostatistical practice problems.

- Supplies:** *Group Review Instructor:*
- Electronic device
 - Projector
 - Kahoot® account
 - Kahoot® quiz
 - Practice problems related to current unit material

Students:

- Electronic device (such as a phone, tablet or laptop)
- Writing utensil
- Paper
- Scientific or graphing calculator

Directions: *Before Group Review Instruction Session:*

1. GRI will create a Kahoot® account (<https://create.kahoot.it>).
2. GRI will compile practice problems related to the current unit material.
3. GRI will create a Kahoot® quiz and publish it.

During Group Review Instruction Session:

1. GRI will log into Kahoot® account and start a live quiz (the Kahoot® they created prior to group review session).
2. GRI will project the quiz in front of the classroom.
3. GRI will instruct students to take out their electronic device and join the Kahoot® - following the prompts on the screen.
4. GRI will begin the Kahoot® when all students present for the review session have joined.
5. Students will take the Kahoot® quiz one question at a time (questions are timed; you can adjust the time allotment per question in the quiz settings).
6. GRI will analyze data at the end of the Kahoot® and can either
 - Review most missed questions.
 - Review all questions.

Helpful Tip:

Do not overload the students with a ton of questions during the review session. 10 - 15 should be sufficient.

GRI Review Session #4

Reviews exposures/outcomes and types of study designs related to Epidemiology.

0 teachers 1 play 1 player

A public kahoot

Questions (10)

1 - Quiz

Exposures are often called _____?

30 sec

- Outcomes
- Risk Factors
- Confounders
- Increased Risk

X

/

X

X

2 - Quiz

Is Cervical Cancer the exposure or outcome in this diagram?

30 sec

- Exposure
- Outcome
- Neither

X

/

X

3 - Quiz

Which of the following study designs are considered **EXPERIMENTAL** studies?

60 sec

- Cohort Study
- Crossover Trial
- Randomized Controlled Trial
- Case-Control Study

X

/

/

X

4 - Quiz

Which of the following study designs are considered **OBSERVATIONAL** studies?

60 sec

- Randomized Controlled Trial
- Crossover Trial
- Case-Control Study
- Cross-sectional Survey

X

X

/

/

5 - True or false

A randomized controlled trial is considered the "gold standard" of study designs.

30 sec

- True
- False

/

X

6 - Quiz

Identify the type of study: participants free of a diabetes are followed over time for the incidence of diabetes.

60 sec

- Cross-Sectional Survey
- Case-Control Study
- Cohort Study
- Case Report

- X
- X
- ✓
- X

9 - Quiz

Which of the following is a disadvantage of a case report study?

60 sec

- Easy to conduct
- No control or comparison group
- Usually ethical
- Expensive and time consuming

- X
- ✓
- X
- X

7 - Quiz

What type of study involves each participant being assigned to two or more sequential treatments?

60 sec

- Cross-Sectional Survey
- Case-Control Study
- Cohort Study
- Crossover Trial

- X
- X
- X
- ✓

10 - Quiz

Select all the factors you should consider when choosing a study design

60 sec

- Time
- Money
- Ethics
- Scientific Question

- ✓
- ✓
- ✓
- ✓

8 - Quiz

In a RCT study, if the control group is on the current standard of care - what type of control trial are they?

60 sec

- Placebo-Controlled
- Active-Controlled

- X
- ✓

Appendix C
Activity Name: Pair Competition

Objective: Students will be able to:

- Work in pairs to solve biostatistical practice problems in a timed setting.

Supplies: *Group Review Instructor:*

- Worksheet with practice problems related to current unit material
- Whiteboard
- Whiteboard markers
- Stopwatch

Students:

- Writing utensil
- Paper
- Scientific or graphing calculator

Directions: *Before Group Review Instruction Session:*

1. GRI will compile practice problems related to the current unit material and create a worksheet.

During Group Review Instruction Session:

1. GRI will split students into pairs – either randomly or let students decide. GRI will instruct the partners that they are going to work together to solve practice problems and then present their work on the board. For every question the pair gets correct, they are awarded a point.
2. GRI will pass out a worksheet of practice problems.
3. GRI will begin the timer (3 – 5 minutes) and instruct students to begin a practice problem.
4. When time is called, each pair will go up to the whiteboard and “show” their work and highlight their final answer.
5. GRI will review each pair’s worked out solution – pointing out common themes and filling in gaps when necessary. The GRI will review and highlight which information the students struggled with on the practice problem.
6. GRI will repeat steps 4 through 6 until the worksheet is complete.
7. The pair with the most points at the end of the worksheet can be incentivized (if applicable).

Helpful Tip:

This is a great activity to pair with reviewing homework problems during a GRI session.
4-8 free response worksheet questions + 4-5 homework problems should be sufficient

KEY

- MMR → 1 - developed AUTISM
 NO MMR → - did not develop autism

A national survey is conducted to assess the association between MMR vaccines and autism in persons over the age of 5. Development of autism is monitored over a 5 year-follow-up period. Out of 29 participants who received the MMR vaccine, 2 developed autism. Out of 12 participants who did not receive the MMR vaccine, 3 developed autism.

1. Using the following information, construct a 2 x 2 table:

	developed Autism	did not develop Autism	
MMR	2 (a)	27 (b)	29 HI who got MMR
NO MMR	3 (c)	9 (d)	12 HI who did not get MMR
	5 HI who developed autism	36 HI who did not develop autism	41 total part.

2. Calculate the cumulative incidence of autism in persons over 5 years of age.

$$\frac{5}{41} = 0.1219 \text{ or } 12.2\%$$

3. Calculate the relative risk of autism in MMR vaccinated as compared to non-MMR vaccinated persons.

$$\frac{\frac{2}{29}}{\frac{3}{12}} \rightarrow \frac{0.06896}{0.25} = 0.276$$

4. Calculate the odds ratio of autism in MMR vaccinated as compared to non-MMR vaccinated persons.

$$\frac{\frac{\frac{2}{29}}{1 - \frac{2}{29}}}{\frac{\frac{3}{12}}{1 - \frac{3}{12}}} \rightarrow \frac{0.07407}{0.3333} \text{ OR } \frac{\frac{a}{b}}{\frac{c}{d}} = \frac{\frac{2}{27}}{\frac{3}{9}} \rightarrow \frac{2}{9} = 0.222$$

A national survey is conducted to assess the association between MMR vaccines and autism in persons over the age of 5. Development of autism is monitored over a 5 year-follow-up-period. Out of 29 participants who received the MMR vaccine, 2 developed autism. Out of 12 participants who did not receive the MMR vaccine, 3 developed autism.

1. Using the following information, construct a 2 x 2 table:

2. Calculate the cumulative incidence of autism in persons over 5 years of age.
3. Calculate the relative risk of autism in MMR vaccinated as compared to non-MMR vaccinated persons.
4. Calculate the odds ratio of autism in MMR vaccinated as compared to non-MMR vaccinated persons.

Appendix D
Syllabus Blurb

Group Review Instructor:

Name: Jalyn Rodriguez

Email: jrodriguez@xxx.edu

Phone: (555) 555-5555

Face-to-Face Office Hours: (M) 5pm - 6pm, Randall Library

Virtual Office Hours: (T), (W), & (Th) 7pm - 8pm, Zoom

Group Review is like Supplemental Instruction in the sense of an undergraduate peer leading a review session that covers content from a specific course. This is the second time that Dr. SeaHawk will be offering such services for PBH 299. When you come to a Group Review session, you should expect to encounter a welcoming and inclusive environment. Since Group Review sessions are collaborative, you should expect to work in small groups with other students in your class; however, Group Review is a low stakes environment (you won't be graded!).

Exposure to Sexual Health Education During Elementary School Impacts Perceived Knowledge of STI Prevention and Contraception among College Students

Samantha Ortega, MEd, CHES®, Ronald D. Williams Jr., PhD, CHES®, and Mary Odum, PhD

Abstract

This study explored the type, frequency, exposure, and initial exposure of pre-college sexual health education and how these factors related to current sexual health perceived knowledge among college students. The sample consisted of 632 currently enrolled college students at one Texas university who completed a web-based survey in spring 2019. Results indicated perceived knowledge about STI/HIV prevention was higher among college students who received comprehensive sex education as opposed to abstinence-only and received initial exposure to sexual health education during elementary school. STI/HIV prevention perceived knowledge scores increased as the frequency and intensity of sexual health education increased. Contraception perceived knowledge was higher among college students who received comprehensive sex education and received initial exposure to sexual health education during elementary school. Contraception perceived knowledge scores increased as the frequency and exposure of sexual health education increased. Results of this study suggest early and consistent implementation of comprehensive sexual health education curricula, beginning in elementary or

middle school, may have an impact on perceived knowledge of sexual health as students progress to the college and university setting.

Introduction

During adolescence, individuals form acceptance or rejection of personal responsibility, including for their sexual health and decision-making (Lechner et al., 2013). However, youth often lack necessary knowledge to make informed decisions about their sexual health (Lally et al., 2015). For example, data show U.S. adolescents graduate high school with insufficient knowledge about sexuality and enter college lacking adequate knowledge regarding their sexual health (Franklin & Dotger, 2011). This lack of knowledge has been associated with an increased risk of exposure to sexually transmitted infections and unwanted pregnancy for those who are sexually active (Yazici et al., 2012).

University students who received limited sexual health education during adolescence often turn to college programs to further sexual health knowledge (Rutledge et al., 2011). As a response, many universities offer resources addressing sexuality-related topics, as well as

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other health-related issues, to increase the health literacy of uninformed students (Rutledge et al., 2011). Recent research has established that U.S. university students lacked knowledge regarding the modes of transmission and methods of avoiding HIV (Gómez-Camargo et al., 2014; Yared et al., 2017); this lack of knowledge is especially troubling because it is identified as fifth-grade competency by the National Sexuality Education Standards (Future of Sex Education Initiative, 2012). Prior reports indicate sexual health literacy was inadequate among U.S. students (Simpson et al., 2015), which may reflect inadequate sexual health education during formative years.

Discussions of timing, content, and method of delivering sexual health education have long been controversial (Franklin & Dotger, 2011; Herrman et al., 2013), dating back to introducing school health in 1913 (Moran, 2000). While some researchers have suggested to introduce sexual health education programs in high school, around the time a majority of students report first engaging in sexual behaviors (Yared et al., 2017), other national recommendations suggest an earlier initial exposure to sexual health education.

National Sexuality Education Standards were developed to “provide clear, consistent and straightforward guidance on the essential minimum, core content for sexuality education that is age-appropriate for students in grades K-12” (Future of Sex Education Initiative, 2012, p. 9). The standards specify minimum content knowledge and skills for students in each grade, beginning in kindergarten, that students should possess related to seven identified topics. While Texas has not yet fully adopted the national standards, sex education is transitioning from an abstinence only curriculum to an abstinence-plus approach (Texas Freedom Network Fund [TFNEF], 2019). Currently, eight of the ten largest school districts in Texas follow an abstinence-plus approach; however, students continue to receive limited coverage on topics identified in the national standards as essential (TFNEF, 2019). What is lacking from the literature is evidence of

how timing of initial exposure, curriculum type and length impact students’ later in life.

Study Purpose

The purpose of this study was to fill the literature gap related to the ideal timing of initial exposure to sexual health education, as well as how the type and length of sexual health education curriculum prior to college affected students’ perceived knowledge. The current study explored college students’ experiences with school-based sexual health education prior to college, and their perceived knowledge about contraception and STI/HIV prevention. Specifically, this study measured associations between college students’ perceived knowledge related to sexual health and (a) initial exposure to school-based sexual health education, (b) amount of time in school-based sexual health education, and (c) the type of sexual health programming and college students’ perceived knowledge related to sexual health.

Methods

The following four research questions guided this study:

- What is the association between the number of hours spent on sexual health education and students’ perceived knowledge about STI/HIV prevention and contraception?
- What is the association between initial exposure to sexual health education and students’ perceived knowledge about STI/HIV prevention and contraception?
- What is the association between the type of curriculum received and student perceived knowledge about STI/HIV prevention and contraception?
- What is the association between the exposure of lessons and the type of curriculum received?

Measures

Of interest in this study were the type, frequency, intensity, and time of initial exposure to sexual health education. Each measure was operationally defined as indicated below.

Type. Participants were asked “From the definitions below, which model(s) of sex education have you experienced?” The response choices were “Comprehensive Sex Education Only- detailed information about sexually transmitted infections, contraception, and abstinence; teaches about condoms and contraception and possibly communication skills,” “Abstinence Only - includes discussions of values, character building, and, in some cases, refusal skills; does not teach about contraception or condom use” “I have experienced separate experiences in both types of sex education, “ and “No formal sex education lessons or discussions”.

Frequency. Participants were asked “Approximately how many school hours were spent on the subject of sex education during your school years? The response choices were “none or less than 2 class periods,” “2 to 5 class periods,” “6-10 class periods,” “11-17 class periods,” and “more than 17 class periods”.

Exposure. Participants were asked “How would you best describe the duration and intensity of your previous school-based sex education course(s), if you had any?” The response choices were “nothing or very little was taught in school,” “sex education taught occasionally as part of other courses (e.g., Health or PE),” “one full course devoted to sex education during middle school,” “one full course devoted to sex education during high school,” “two or more full courses devoted to sex education during middle and/or high school,” and “other”.

Initial Exposure. Participants were asked “What would best describe when you first received a lesson in sex education? The response choices were “elementary,” “middle school,” “beyond middle school,” and “no formal lessons”.

Perceived Knowledge. Participants were asked questions regarding perceived knowledge related to STI/HIV prevention and contraception use. The items were “After completing your previous sex education lessons, what was your level of knowledge about how to prevent yourself from getting a sexually transmitted infection (including HIV)?” and “After completing your

previous sex education lessons, what was your level of knowledge about various types of contraception that are available (i.e., devices and drugs that prevent pregnancy) and how to use them appropriately?” Responses included a 10-point Likert scale from “no knowledge at all” to “extremely knowledgeable”.

Instrumentation

The instrument in this study was borrowed with permission and revised from a survey used by Walcott et al. (2011). The survey for this study consisted of demographic items and 22 questions exploring the type of curriculum, perceived knowledge, depth and exposure to sexual health lessons received. The wording of questions from the original survey remained the same; however, the Likert responses were adapted from a 6-point to a 10-point scale. Research on ordinal, Likert scale development has not indicated an ideal scale size, but studies have suggested that survey respondents prefer larger scales (Dawes, 2008) with a 10-point scale generating the highest preference (Preston & Colman, 2000).

Procedure

This project was approved by the university’s Institutional Review Board in October 2018. Following IRB approval, a pilot test was conducted in three selected undergraduate health education courses where a small sample of students were asked to complete a brief survey in paper form. Students voluntarily participated in the pilot study and did not face any penalty for opting out. The purpose of the pilot phase was to test for content validity such as clarity of items, sequencing, and readability. Additionally, the test provided an estimated response time. Based on pilot test feedback, minor revisions for wording clarity were made to the survey items.

During the study phase, an email invitation to participate in the study was sent to students’ university email. Using the student list management tool, the researchers accessed student emails from the Office of Research and Sponsored Programs. The data randomization function on Microsoft

Excel was used to randomize and select a total of 15,000 student emails to receive the survey. The email invitation included a passive consent form, information about the study, researchers' contact information, and a link to access the anonymous survey. Survey completion and submission indicated voluntary consent to participate in the study. Responses were automatically collected and stored within Qualtrics and no further action was required from the participant. The survey was available for completion from February 1 to March 1, 2019. The survey took approximately 10 minutes to complete. After closing the survey, the researchers downloaded and imported the data into SPSS.

Participants

Participants for this study were undergraduate students attending a large public university in Texas. Participants were required to be over the age of 18 and be classified as an undergraduate by the University Registrar. Students younger than 18 years of age were excluded from the study because it was not practicable to obtain parental consent; therefore, they were not sent an email invitation to participate. With a confidence level of 95% and a confidence interval of 5%, it was determined that a minimum sample of 381 participants was needed. The sampling frame consisted of 15,000 undergraduate students enrolled for the 2019 spring semester who each received an email invitation to participate in this study; however, only 791 students completed the survey. For data analyses, the researchers restricted the sample to only those participants who completed all sections of the survey instrument; therefore, the final sample used in data analyses was $n = 632$.

Data Analysis

Descriptive statistics were used to describe the demographic characteristics of the sample (age, gender, race and ethnicity). One-way analysis of variance (ANOVA) procedures examined the differences between groups (e.g., participants reporting comprehensive sex

education and those reporting abstinence-only education) on knowledge about STI/HIV and contraception. A Chi-square was used to examine the association between the type of sexual health education curriculum received and intensity of sexual health education lessons.

Results

The final study sample included the 632 college students who fully completed the survey instrument. The majority of respondents (67.6%) were between the ages of 18 and 21 years. When asked to report race and ethnicity, most participants identified as White (53.9%) followed by Hispanic/Latino (30.7%), and Black/African American (5.2%). Over half of the sample identified as female (75.4%) and only 22.7% identified as male. Participants also reported the region of the state in which they received sex education with 27.4% from the central Texas region, 22.9% from the southeast, 18.1% from the southwest, and 13.4% from the north. This represented a large geographical distribution throughout the state (Texas Department of State Health Services, 2019).

The survey instrument provided operational definitions of both comprehensive sex education (CSE) and abstinence only education (AOE) and participants were asked to identify which curriculum type they experienced. Overall, 38.9% of respondents reported receiving only comprehensive sex education (CSE) and 20.6% reported receiving abstinence only education (AOE), while 32.3% reported experiencing both types of sex education, and 8.2% did not receive formal lessons or discussions. Participant demographics are presented in Table 1.

Time Spent on Sexual Health Education and Perceived Knowledge

Participants were asked how many class periods on average were spent on sexual health education in middle and high school and their perceived knowledge about STI/HIV prevention and contraception. Table 2 shows the majority of participants (52.5%) reported spending less than

Table 1
Participant Demographics

Characteristic	Frequency	Percent
Age (years)		
18 or 19	204	32.3 %
20 or 21	223	35.3 %
22-25	161	25.5 %
26-29	28	4.4 %
30 or older	16	2.5 %
Gender		
Male	143	22.7 %
Female	476	75.4 %
Non-binary	10	1.6 %
Not identified	3	0.3 %
Race/Ethnicity		
White	340	53.9 %
Black/ African American	33	5.2 %
Hispanic/ Latino	194	30.7 %
Multi-Ethnic	43	6.8 %
Other	21	3.3 %
Public Health Region		
Northern Panhandle	8	1.3 %
Northcentral (Abilene region)	5	0.8 %
Northcentral (Dallas region)	76	12.6 %
Northeast	14	2.3 %
East	17	2.8 %
Southeast (Houston region)	143	23.7 %
Central (Austin region)	174	28.9 %
Southcentral (San Antonio region)	115	19.1 %
Westcentral (Odessa region)	5	0.8 %
West (El Paso region)	10	1.7 %
South (Texas-Mexico border region)	36	6.0

Note. $n = 632$. Frequency values differ due to missing data.

two class periods on sexual health education, followed by 36.0% who spent two to five class periods. Surprisingly, only 1.9% of participants received more than seventeen class periods of sexual health education. The association between the amount of class periods and student perceived knowledge was analyzed using one-

way ANOVAs (Table 3). Results revealed those who spent more time learning about sexual health had significantly higher STI/HIV prevention ($F = 9.523$; $p \leq .001$) and contraception ($F = 5.503$; $p \leq .001$) knowledge scores than those who spent less time on this subject. Participants who reported spending less than two class periods on sexual

Table 2

Descriptive Statistics for Amount of Time Spent on Sexual Health Education, Initial Exposure to Sexual Health Education, and Exposure to Sexual Health Education

Variables	Frequency	Percent
Frequency of Sexual Health Education		
None or <2 class periods	331	52.5 %
2 – 5 class periods	227	36.0 %
6 – 10 class periods	44	7.0 %
11 – 17 class periods	16	2.5 %
>17 class periods	12	1.9 %
Initial Exposure to Sexual Health Education		
Elementary	196	31.0 %
Middle school	299	47.3 %
Beyond middle school	89	14.1 %
No formal lessons	48	7.6 %
Exposure to Sexual Health Education		
Nothing or very little was taught	144	22.9 %
Taught occasionally as part of other courses (health or PE)	379	60.3 %
1 full course devoted to sex education during middle school	32	5.5 %
1 full course devoted to sex education during high school	29	4.6 %
2+ full courses devoted to sex education during middle/ high school	30	4.8 %
Other	15	2.4 %

Note. n = 632. Frequency values differ due to missing data.

health reported a lower knowledge level about STI/HIV prevention ($M = 4.88$ on a 1-10 scale) than those who received more than seventeen class periods ($M = 7.42$ on a 1-10 scale). Similar results were seen when measuring respondents' knowledge about contraception. Those who spent less than two class periods reported a lower knowledge level about contraception ($M = 4.13$ on a 1-10 scale) than those who received more than seventeen class periods ($M = 5.75$ on a 1-10 scale). However, contraception knowledge was higher ($M = 6.02$ on a 1-10 scale) among those students who received 6-10 class periods of sexual health education. Increasing the amount of class time dedicated towards the teaching of sexual health may help to increase student knowledge about STI/HIV prevention and contraception.

Initial Exposure to Sexual Health Education and Perceived Knowledge

Participants' initial exposure to sexual health education was measured as the moment when they first received a school-based lesson. Table 2 shows the majority of respondents (78.3%) received their first lesson in middle school or earlier while 14.1% received their first lesson after middle school. Additionally, 7.6% of participants reported not receiving formal lessons about sexual health. The association between initial exposure to sexual health education and student perceived knowledge was analyzed using one-way ANOVAs (Table 3). Results showed participants who had an early exposure to sexual health education had significantly higher STI/HIV prevention ($F = 26.467$; $p \leq .001$) and contraception ($F =$

Table 3

Relationship of Participants' Perceived Knowledge about STI/HIV Prevention and Contraception Based on Frequency, Initial Exposure, and Type of Sexual Health Education Curriculum

Variables	STI/HIV Prevention		Contraception		
	N	M+SD	P	M+SD	P
Frequency - Class Periods					
None or > 2	328	4.88+3.33	.000	4.13+3.19	.000
2 to 5	227	6.07+2.70		4.72+2.74	
6 to 10	43	6.88+2.54		6.02+2.92	
11 to 17	16	6.88+2.85		5.81+3.35	
< 17	12	7.42+3.14		5.75+3.55	
Grade Level of Initial Exposure					
Elementary	196	6.39+2.94	.000	5.16+3.04	.000
Middle School	295	5.54+2.92		4.52+2.99	
Beyond Middle School	88	5.51+3.06		4.59+2.89	
No Formal Lessons	48	2.15+3.13		2.08+2.85	
Type of Curriculum					
CSE Only	240	7.19+2.32	.000	6.08+2.65	.000
AOE Only	129	3.33+2.74		2.34+2.23	
Both CSE and AOE	200	5.88+2.58		4.78+2.76	
No Formal Lessons	54	2.19+3.14		2.00+2.86	

Note. Frequency values differ due to missing data.

Table 4

Type of Curriculum Received and Intensity of Sexual Health Education Lessons

Variables	CSE ^a Only	AOE ^b Only	Both CSE and AOE	No Formal Lessons
Nothing or very little was taught	34 (14.4%)	38 (29.5%)	28 (14.0%)	41 (75.9%)
Taught occasionally as part of other courses (health or PE)	152 (62.6%)	76 (58.9%)	140 (70.0%)	11 (20.4%)
1 full course devoted to sex education during middle school	15 (6.2%)	6 (4.7%)	10 (5.0%)	1 (1.9%)
1 full course devoted to sex education during high school	17 (7.0%)	3 (2.3%)	8 (4.0%)	0 (0.0%)
2+ full courses devoted to sex education during middle/high school	18 (7.4%)	5 (3.9%)	7 (3.5%)	0 (0.0%)
Other	6 (2.5%)	1 (0.8%)	7 (3.5%)	1 (1.9%)

^aCSE = Comprehensive Sex Education

^bAOE = Abstinence Only Education

13.704; $p \leq .001$) knowledge scores than those who spent less time on this subject. Participants who received their first lesson in elementary school reported the highest knowledge level about STI prevention ($M = 6.39$ on a 1-10 scale) and contraception ($M = 5.16$ on a 1-10 scale). In comparison, those who received their first lesson after middle school reported lower knowledge levels about STI prevention ($M = 5.51$ on a 1-10 scale) and contraception ($M = 4.59$ on a 1-10 scale). The lowest knowledge level in both STI prevention and contraception was reported by those who did not receive formal lessons.

Type of Curriculum Received and Perceived Knowledge

One-way ANOVAs were used to analyze the association between these two variables (Table 3). Results showed respondents who received CSE have significantly higher levels of knowledge about STI/HIV prevention ($F = 93.659$; $p \leq .001$) and contraception ($F = 75.167$; $p \leq .001$) than those who received AOE. Respondents who received CSE reported the highest levels of knowledge about STI/HIV prevention ($M = 7.19$ on a 1-10 scale) and contraception ($M = 6.08$ on a 1-10 scale). When compared to their counterparts who received AOE, the difference in knowledge scores was statistically significant. Those who received AOE reported a knowledge score of 3.33 on a 1-10 scale for STI/HIV prevention and 2.34 on a 1-10 scale for contraception. Interestingly, respondents who experienced both CSE and AOE reported higher knowledge scores in both STI prevention ($M = 5.88$ on a 1-10 scale) and contraception ($M = 4.78$ on a 1-10 scale) than those who only experienced AOE. The lowest knowledge scores were reported by respondents who did not receive any formal lessons.

Type of Curriculum Received and Intensity of Lessons

As Table 2 indicates, the majority of participants (60.3%) received sexual health education as part of their courses such as Health or Physical Education, while 22.9% reported

none to very little sexual health education was taught in school. In contrast, only 4.8% of participants reported that two or more courses were dedicated to sexual health education during middle and/or high school. The association between the type of curriculum received and the intensity of lessons was analyzed using a chi-square analysis (Table 4). Results showed participants who received CSE reported were more likely to report having increased intensity of lessons compared to those who received other types of sexual health education ($\chi^2 = 120.155$; $p \leq .001$). Among participants who received CSE, 7.4% reported intensity of two or more full sexual health education courses in middle or high school, 7.0% reported one full course in high school, and 6.2% reported one full course in middle school. Among participants who received AOE, only 3.9% reported intensity of two or more full sexual health education courses in middle or high school, 2.3% reported one full course in high school, and 4.7% reported one full course in middle school. Those who received AOE also experienced higher intensity of lessons than those who received a combination of both CSE and AOE. Of participants who received a combination curriculum, 3.5% reported intensity of two or more full sexual health education courses in middle or high school, 4.0% reported one full course in high school, and 5.0% reported one full course in middle school.

Discussion

This study examined college students' previous experience with school-based sexual health education prior to entering college. Results indicated that type of sexual health education curriculum experienced, frequency of lesson delivery, and time of initial exposure all had a significant impact on college students' perceived knowledge of STI/HIV prevention and contraception practices. Specifically, greater sexual health knowledge was observed among students who participated in a comprehensive sex education curriculum (CSE) as opposed to abstinence-only curriculum (AOE). This is an

important distinction as recent research has linked abstinence-only education with increased teen pregnancy and birth rates (Stanger-Hall & Hall, 2011) and teen STI rates (Carr & Packham, 2017) across the U.S. Additionally, multiple studies have questioned the usefulness of programs focusing on abstinence and indicated such programs have very limited impact on reducing risky adolescent sexual behaviors (Denford et al., 2017; Santelli et al., 2017).

University students are presumably prepared to overcome daily life challenges, including matters related to sexual health (Simpson et al., 2015). Findings in this study suggest students entering college may not be receiving adequate sexual health education prior to college and highlight the importance of early exposure to a sexual health curriculum. Recent research has indicated pre-college comprehensive sexuality education may help reduce the risk of sexual assault in college (Santelli et al., 2018) and the present study expands on the potential benefits of early onset comprehensive sexual health education programs.

As researchers have called for innovation development in adolescent sexual health education programs (Wilson et al., 2008; Wilson et al., 2017), results from this study may assist in exploring new avenues for curricula development, as well as advocacy for early implementation of comprehensive sexual health education programs. In this study, participants who received their first sexual health lesson after middle school reported a lower perceived knowledge level about STI/HIV prevention and contraception than those who received their first lesson in elementary school, suggesting the ideal time for students to experience their first sexual health lesson may be during elementary and middle school. Coupled with growing support for comprehensive sexuality education among parents of elementary-aged schoolchildren (Dake et al., 2014), the results of this study add to the existing compelling evidence for a more comprehensive approach to sexual health education for elementary schoolchildren.

The current study found higher perceived knowledge among college students who reported initial exposure to sexual health education in elementary or middle school and who reported receiving CSE-only sexual health education. Future studies should explore whether these relationships also exist with higher actual knowledge regarding sexual health and sexuality-related behaviors. Studies exploring timing of initial exposure on long-term sexual health literacy may be informative, as sexual health literacy is lacking among U.S. college students (Simpson et al., 2015) who often rely on alternative sources of sexual health information (e.g., the media or peers), which may deliver inaccurate information (Evcili & Golbasi, 2017). Exploring whether timing of initial exposure increases student sexual self-efficacy may be warranted (Koch et al., 2010; Shepherd et al., 2017).

While this study contributes to the understanding about the importance of school-based sexual health education, there are limitations to address. This study relied on self-reported data which may pose a threat to internal validity. Using self-reporting leads to numerous biases such as honesty, question interpretation, and introspective ability. We are unable to know if participants responded honestly, fully understood the questions, or accurately assessed their experiences. Additionally, self-reporting limits the generalizability of the findings. Participants belonged to the same university, but not all demographics are represented sufficiently to guarantee generalizability. Furthermore, the sample size is relatively small when compared to the total population of the university and the low response rate may have led to selection bias among participants.

Conclusion

Providing comprehensive sexual health education addressing the needs and interests of all students can be challenging. State and district-level policies regarding sexual health education can minimize the opportunity to deliver the education necessary and at an age-appropriate

grade level. The participants in this study with the highest knowledge levels were those who received CSE, were exposed to sexual health education before high school, and experienced more class periods dedicated to sexual health suggesting these are important factors that may impact adolescents and young adults' overall sexual health.

References

- Carr, J. B., & Packham, A. (2017). The effects of state-mandated abstinence-based sex education on teen health outcomes. *Health Economics*, 26(4), 403-420.
- Dake, J. A., Price, J. H., Baksovich, C. M., & Wielinski, M. (2014). Preferences regarding school sexuality education among elementary schoolchildren's parents. *American Journal of Health Behavior*, 45, 29-36.
- Dawes, J. (2008). Do data characteristics change according to the number of points used? An experiment using 5-point, 7-point, and 10-point scales. *International Journal of Market Research*, 50(1), 61-77.
- Denford, S., Abraham, C., Campbell, R., & Busse, H. (2017). A comprehensive review of reviews of school-based interventions to improve sexual health. *Health Psychology Review*, 11(1), 33-52.
- Evçili, F., & Golbasi, Z. (2017). Sexual myths and sexual health knowledge levels of Turkish university students. *Sexuality & Culture*, 21(4), 976-990.
- Franklin, R. M., & Dotger, S. (2011). Sex education knowledge differences between freshmen and senior college undergraduates. *College Student Journal*, 45(1), 199-213.
- Future of Sex Education Initiative. (2012). National Sexuality Education Standards: Core Content Skills, K-12. <https://siecus.org/wp-content/uploads/2018/07/National-Sexuality-Education-Standards.pdf>
- Gómez-Camargo, D. E., Ochoa-Díaz, M. M., Canchila-Barrios, C. A., Ramos-Clason, E. C., Salgado-Madrid, G. I., & Malambo-García, D. I. (2014). Sexual and reproductive health in university students at an institution of higher learning in Colombia. *Revista De Salud Publica (Bogota, Colombia)*, 16(5), 660-672.
- Herrman, J. W., Solano, P., Stotz, L., & McDuffie, M. (2013). Comprehensive sexuality education: A historical and comparative analysis of public opinion. *American Journal of Sexuality Education*, 8(3), 140-159.
- Koch, P. B., Colaco, C., & Porter, A. W. (2010). Sexual health practices self-efficacy scale. In T. D. Fisher, C. M. Davis, W. L. Yarber, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (pp. 245-347). Routledge.
- Lally, K., Nathan-V, Y., Dunne, S., McGrath, D., Cullen, W., Meagher, D., Coffey, J. C., & Dunne, C. (2015). Awareness of sexually transmitted infection and protection methods among university students in Ireland. *Irish Journal of Medical Science*, 184(1), 135-142.
- Lechner, K. E., Garcia, C. M., Frerich, E. A., Lust, K., & Eisenberg, M. E. (2013). College students' sexual health: Personal responsibility or the responsibility of the college? *Journal of American College Health*, 61(1), 28-35.
- Moran, J. P. (2000). *Teaching Sex: The shaping of adolescence in the 20th century*. Harvard University Press.
- Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: Reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica*, 104(1), 1-15.
- Rutledge, S. E., Siebert, D. C., Chonody, J., & Killian, M. (2011). Information about human sexuality: Sources, satisfaction, and perceived knowledge among college

- students. *Sex Education*, 11(4), 471-487.
- Santelli, J. S., Grilo, S. A., Choo, T. H., Diaz, G., Walsh, K., Wall, M., Hirsch, J. S., Wilson, P. A., Gilbert, L., Khan, S., & Mellins, C.A. (2018). Does sex education before college protect students from sexual assault in college? *PLoS One*, 13(11), e0205951.
- Santelli, J. S., Kantor, L. M., Grilo, S. A., Speizer, I. S., Lindberg, L. D., Heitel, J., & Ott, M. A. (2017). Abstinence-only-until-marriage: An updated review of U.S. policies and programs and their impact. *Journal of Adolescent Health*, 61(3), 273-280.
- Shepherd, L. M., Sly, K. F., & Girard, J. M. (2017). Comparison of comprehensive and abstinence-only sexuality education in young African American adolescents. *Journal of Adolescence*, 61, 50-63.
- Simpson, S. J., Blizzard, L., Turner, R., Clifford, C., Ross, K., Sefton, N., & Owen, L. (2015). Sexual health literacy of the student population of the University of Tasmania: Results of the RUSSL Study. *Sexual Health*, 12(3), 207-216.
- Stanger-Hall, K. F., & Hall, D. W. (2011). Abstinence-only education and teen pregnancy rates: Why we need comprehensive sex education in the U.S. *Plos One*, 6(10), e24658.
- Texas Department of State Health Services. (2019). Public health regions. <https://www.dshs.texas.gov/regions/default.shtm>
- Texas Freedom Network Fund. (2019). Time for change: Sex ed and the Texas health curriculum standards. https://siecus.org/wpcontent/uploads/2019/09/TX_Time_for_Change_FINAL_9.19.2019.pdf
- Walcott, C. M., Chenneville, T., & Tarquini, S. (2011). Relationship between recall of sex education and college students' sexual attitudes and behavior. *Psychology in the Schools*, 48(8), 828-842.
- Wilson, K. L., Garney, W. R., Hays, C. N., Nelon, J. L., Farmer, J. L., & McLeroy, K. R. (2017). Encouraging innovation in teen pregnancy prevention programs. *Creative Education*, 8(2), 294-303.
- Wilson, K. L., Pruitt, B. E., & Goodson, P. (2008). The impact of middle school principals on adoption of abstinence-only-until-marriage programs in their school's curriculum. *American Journal of Health Education*, 39(5), 258-271.
- Yared, A., Sahile, Z., & Mekuria, M. (2017). Sexual and reproductive health experience, knowledge, and problems among university students in Ambo, central Ethiopia. *Reproductive Health*, 14(1), 41.
- Yazici, S., Dolgun, G., Zengin, N., & Bayram, G. O. (2012). The determination of university students' knowledge, attitudes, and behaviors on the matter of sexual health. *Sexuality & Disability*, 30(1), 67-75.
- Masri, A. E. & Sabzalieva, E. (2020). Dealing with disruption, rethinking recovery: Policy responses to the COVID-19 pandemic in higher education. *Policy Design and Practice*, 3(3), 312-333. <https://doi.org/10.1080/25741292.2020.1813359>

Motivations, Confidence, and Training of Third-Party Providers of Sexuality Education

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Abstract

Previous sexual health education research has focused on curricula and audience, while few studies have explored characteristics and perceptions of educators delivering sexuality education. As U.S. schools are increasingly reliant on third-party providers to deliver sexuality education, exploring this workforce is vital. This study examined third-party provider motivations for becoming sexuality educators, confidence in delivering sexuality education, and discipline-specific training received and desired. Fourteen sexuality educators participated in a one-on-one interview and completed a 24-item questionnaire. Qualitative interview data were thematically analyzed with a codebook and quantitative data were analyzed descriptively. Results revealed career motivation was driven by personal and academic experiences, a disconnect between quantitatively and qualitatively self-reported confidence, and formal training trends were related to overall work-related confidence. This study is one of the first to explore the issue of confidence of third-party providers in delivering sexuality education and contributes information to improve the third-party providers workforce, assist schools in selecting the most appropriate third-party to deliver specific sexuality education programs, and further research on sexuality education delivery.

Introduction

Sexuality education positively impacts adolescents and families, yet schools and community health organizations encounter substantial barriers to delivering quality sexuality education, including lack of resources and knowledgeable educators (Elia & Tokunaga, 2015; Holstrom, 2015; Ott, Rouse, Resseguie, Smith, & Woodcox, 2011). To address some of these barriers, schools and community

organizations often turn to third-party providers. Third-party providers are private or non-profit organizations (e.g., Planned Parenthood or The Red Cross) contracted to deliver sexuality education curriculum (Goldman, 2011). Third-party providers also deliver educator training to diverse audiences in schools and communities (Drake, Firpo-Triplett, Glassman, Ong, & Unti, 2015; Goldman, 2011; Workman, Flynn, Kenison, & Prince, 2015).

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Third-party providers maintain various responsibilities in the delivery of sexuality education, from designing and delivering complete sexuality education programs to providing resources designed to support school-based educators with various combinations of content and delivery packages (McCarthy et al., 2015). For example, third-party providers deliver educational opportunities to families through community, school, or digitally based channels that can be tailored to fit audience needs (Green, Hamarman, & McKee, 2015; Ott et al., 2011; Tortolero et al., 2010). Third-party providers also cater to specific populations (e.g., individuals with disabilities) who otherwise may not receive sexuality education (Ailey, Marks, Crisp, & Hahn, 2003; Curtis, 2017; Schaafsma, Kok, Stoffelen, & Curfs, 2015; Swango-Wilson, 2011).

Teachers have reported third-party providers provide suitable resources to assist them in the delivery of evidence-based, age appropriate content (Goldman, 2011). Researchers have reported teachers routinely sought supplemental training for sexuality education from third-party providers (Eisenberg, Madsen, Oliphant, & Resnick, 2011). For example, guest speakers and interactive games or activities have been reported to accompany existing school-based curriculum to positively impact student experiences and knowledge related to sexuality education (Bouris, Mancino, Jagoda, Hill, & Gilliam, 2016; Gilliam et al., 2016; McRee, Madsen, & Eisenberg, 2014). Providing sexuality educators with training and tools they can utilize positively impacts their confidence in teaching the material and offers interactive methods they can use with their students (Drake et al., 2015; Eisenberg, Madsen, Oliphant, & Sieving, 2013; McCree et al., 2014).

Study Purpose

The purpose of this study was to explore the motivations, confidence, and training of third-party sexuality educators. Previous sexuality education research has primarily focused on curricula and audiences (Barr et al., 2014; Eisenberg et al., 2011;

Eisenberg et al., 2013; Goldman, 2011; Workman et al., 2015), leaving a gap in knowledge about characteristics and perceptions of the third-party educators delivering sexuality education. This study qualitatively explored the perceptions of current third-party providers to better understand their motivations, past training, and confidence in delivering sexuality education to inform the development of effective sexuality education preparation and continuing education programs. Three research questions guided this study: (1) What factors motivate third-party providers of sexuality education to work in their chosen field? (2) How are third-party providers of sexuality education professionally trained and prepared? And, (3) How confident are third-party sexuality educators when delivering sexuality education?

Methods

Participants and Procedures

Participants in this study were currently employed by a third-party provider of sexuality education in a U.S. school or community settings during the study period. The researchers recruited participants by contacting non-profit and local community organizations (n=10) using e-mail addresses or phone numbers obtained through personal contacts and organization websites. Once a contact was established within an organization, the contact identified potential participants and provided them with a written explanation of the research project and an invitation to join the study. Additionally, a recruiting message was posted on a health education listserv providing information about the study and researcher contact information.

Interested participants contacted the lead researcher through e-mail or by phone to inquire about the research study and coordinate the interview time and date. The lead researcher coordinated with participants to arrange times and sites for interviews to be conducted. Interviews were conducted, at the participant's request, either in person or by phone. Participants provided written informed consent to participate in the study and be audio-recorded during the

interview and were compensated for their time with a \$50.00 gift card. All study procedures were approved by the Texas State University Institutional Review Board.

Data Collection

Data collection consisted of both survey administration and one-on-one interviews. Qualitative data were collected through semi-structured interviews conducted by the lead researcher. During each interview, field notes were taken by the interviewer and a trained research assistant to supplement audio-recordings. Each interview began with an explanation of the purpose of the interview and the lead researcher asking for permission to audio-record the interview. Following each interview, the researcher e-mailed an electronic survey to participants to measure participant demographic information, work and training experience, and confidence in delivering sexuality education. The 24-item questionnaire was completed by each participant through the web-based Qualtrics system.

Instrumentation

A semi-structured interview script containing 11 questions was developed by the research team based on the current literature (see Figure 1). The electronic survey contained three Likert scales created by the research team for this study, measuring perceptions of workforce training, confidence in delivering sexuality education, and factors attributing to confidence, respectively. A 3-item scale measured participant's perceptions of training received from their current organization and had a high reliability (Cronbach's alpha score of $\alpha=.892$). The 5-item scale measuring participant confidence levels in delivering sexuality education had an acceptable alpha level ($\alpha=.719$) and the 5-item scale measuring factors contributing to the participant confidence had low alpha reliability score ($\alpha=.541$).

Data Analysis

Multiple researchers analyzed interview data to increase the credibility of findings (Merriam & Tisdell, 2015). Interview recordings

Figure 1
Semi-Structured Interview Guide

1. How would you describe the organization you work for (i.e. non-profit community-based agency, for-profit company working in schools, etc.)?
2. What is your position title?
3. What motivations or past experiences led you to work as a sexuality educator?
4. Do you have any formal education/teaching certifications related to health or sexuality education? If so, what are those credentials?
5. What kind of training (formal or informal), if any, were you provided at the organization at which you currently work?
6. Have you ever received sexuality education training from other organizations? If so, what were these organizations and what type of training did you receive?
7. How would you describe the general content of the sexuality education you deliver? Abstinence-only, abstinence-plus, comprehensive? Please explain.
8. Is there any additional information you would like to have included in your organization's sexuality education curriculum? If so, please explain.
9. What additional training/resources do you need to improve your work as a sexuality educator?
10. What have been your greatest challenges/successes in working as a sexuality educator?
11. What other information would you like to share with me today?

were transcribed verbatim by the lead researcher throughout the data collection stage and thematically analyzed. To enhance rigor of the thematic data analysis process (Roberts, Dowell, & Nie, 2019), two researchers drafted a codebook based on the preliminary analysis of the first interview. A team of five trained research assistants independently coded the first interview utilizing the drafted codebook, then meetings were held to reach consensus on the coding of the first interview and modifications needed for the codebook. The updated codebook was then

used to re-code the first transcript and to code all remaining transcripts, which were initially coded by the lead researcher and checked by the research team. Established codes were further explored by the research team to identify overarching themes. Quantitative survey items were analyzed descriptively with SPSS.

Results

Fourteen third-party sexuality educators consented to participate in this study; however, one participant did not complete the interview or

Table 1
Sample Demographics

Characteristic	Frequency	Percent
Sex		
Female	11	84.6 %
Male	2	15.4 %
Race		
White	7	53.8 %
Black/African American	3	23.1 %
Native Hawaiian/Pacific Islander	3	7.7 %
Multiracial	1	7.7 %
Other	1	7.7 %
Ethnicity		
Non-Hispanic	8	61.5 %
Hispanic	5	38.5 %
Age		
18 - 24 years old	4	30.8 %
25 - 34 years old	8	61.5 %
35 - 55 years old	1	7.7 %
Experience in Sexuality Education		
< 1 year	3	23.1 %
1 - 5 years	10	76.9 %
CHES Certification		
Not CHES certified	9	76.9 %
CHES certified	4	30.8 %
University Degree Related in Health or Sexuality Education		
Relevant degree	9	69.2 %
No relevant degree	4	30.8 %

questionnaire. A total of 13 interviews took place via phone (n=12) and face-to-face (n=1), at the preference of the participant. Average length of interviews was 18.5 minutes (range: 9.5 to 36.0 minutes). Participants worked in two U.S. states at four organizations delivering sexuality education to multiple audiences. As shown in Table 1, participants were primarily female (84.6%), white (53.8%), and non-Hispanic (61.5%). The majority of participants reported being between 25-34 years of age (61.5%), having 1-5 years of experience as a sexuality educator (76.9%), and having earned a degree in health education/promotion or related degree (69.2%).

Descriptive Analytics

As indicated in Table 2, participants perceived face-to-face training as more beneficial

than professional certification or online training. When asked about their confidence levels in delivering sexuality education, participants reported high confidence overall, to mixed gendered audiences (M=4.92) and using proper medical terminology (M=4.92). Regarding factors contributing to confidence levels, participants primarily attributed their confidence to their knowledge of subject matter (M=4.69) and professional experiences (M=4.54).

Thematic Analysis

Four overarching themes emerged during thematic analysis of interviews: Career motivations, professional training experiences, challenges and barriers faced by third-party providers, and programming successes. These primary themes and corresponding sub-themes

Table 2
Descriptive Results of Participant Confidence Providing Sexuality Education (N = 13)

	Frequency	Min	Max	Mean
Perception of my organization's training^a:				
Certification	8	1	5	4.13
Online	9	1	5	3.33
Face-to-face	12	3	5	4.67
Confidence providing sexuality education^b:				
to large audiences?	13	2	5	4.23
to small audiences?	13	4	5	4.69
to mixed gendered audiences?	13	4	5	4.92
with proper medical terminology?	13	4	5	4.92
with my organization's selected curriculum/materials?	13	4	5	4.62
I attribute my confidence level in providing sexuality education to^c:				
my formal training	13	3	5	3.92
my professional experiences	13	2	5	4.54
my personal experiences	13	1	5	4.23
the organizational support I receive from the organization at which I currently work	12	3	5	4.42
my knowledge of subject matter	13	3	5	4.69

^atraining on a scale of 1 (poor) to 5 (excellent)

^bconfidence on a scale of 1 (not confident) to 5 (very confident)

^cconfidence on a scale of 1 (strongly disagree) to 5 (strongly agree)

follow with representative participant quotes. When presenting quotes, information that could potentially identify participants or their employer have been blinded to product identities.

Theme #1: Career motivations. Sexuality educators expressed diverse factors motivating their career choice. These motivating factors were organized into three subthemes: Personal, educational, and career experiences. Nine sexuality educators cited personal experiences from their childhood and adolescence as a factor motivating their career choice. Among these experiences, the two most common were lacking a sexuality education during childhood or adolescence and observing their friends experience negative outcomes from risky sexual behavior. For example, Participant 3 stated:

A lot of my information, or misinformation, prior to that [university] class came from friends from high school or experiences that they had. I never even had a conversation with my parents or a formal education within the school system until college.

Similarly, Participant 5 witnessed friends experience unplanned pregnancies during adolescence, leading to “doing [his/her] own research on sexuality and things like that, just kind of like figuring out myths,” and referenced that his/her “parents weren’t very open to talk about [sexual health].” Similarly, Participants 1 recalled: “I had a lot of friends who were, if not teen moms, not teen moms in high school, they were pregnant very shortly thereafter. You know, I just remember thinking ‘why is this happening?’”

Participants mentioned educational and career experiences as motivators leading to their career choice. Many participants noted that a class they took in college, such as human sexuality or community health, sparked their interest in sexuality education as a career. Participant 9 reported taking a human sexuality course in college led to “[deciding] that is exactly what I needed to do; that’s what I wanted to do with my life.” Similarly, Participant 3, explained the origin for his/her interest in sexuality education:

The passion for this really stemmed from a class that I took in my undergrad work, it was human sexuality, and I learned a lot about reproductive anatomy, consequences of sex, not just pregnancy, but also STDs, and I realized I had no education, myself, prior to that class.

Career experiences, such as internships, mentorships, and volunteer work, were also frequently discussed among participants as motivating experiences for their career choice. Participant 11 shared that “after a few internships I ended up just going further and further deep into community health outreach,” leading to a career in sexual health. Participant 5 shared a similar experience stemming from an internship:

Whenever I had to do my internship for my undergrad I interned with the [name of city] Project Worth, which specializes in teen pregnancy prevention. So, that really fascinated me, and I actually ended up being really good at it.

Theme #2: Professional training experiences. Varying levels and sources of professional training, both within and outside of their current employer, were identified by participants. Five participants reported that internal training experiences often consisted of observing colleagues deliver curriculum or presenting to colleagues for feedback. Participant 5 stated, “when I first started doing sexual health education, you know, I had to ‘teach back’ to multiple people and handle different situations.” Similarly, Participant 10 recalled that “a lot of [training] was just informal, kind of learning by experience. So, shadowing and just practicing the presentations among different colleagues in the field.”

Regarding external training experiences, four participants explicitly reported that their organizations contracted out for employee trainings with national training organizations. Trainings the participants attended through external organizations included trauma-informed training, cultural proficiency training, LGBTQ inclusivity training, and facilitation training.

Participant 2 explained that his/her organization had “done other trainings as well under [national training organization], which is an outside training company, that does trainings nationally for different topics surrounding sexual health education.” Local organizations were also mentioned by participants as external sources of professional training.

Five participants explicitly mentioned having attended, or planning to attend in the future, professional conferences outside of their current organization for training. Specifically, participants mentioned national and local conferences focused on sexual health and other professional events as valuable training resources. Participant 6 discussed his/her recent experiences at a professional conference:

I've attended training on storytelling, which was provided by [national organization] [it] was a training in [city] I had the opportunity to attend. As well as innovative approaches to delivering sexual education curricula. So, that was a training I attended at the [national conference].

Reflecting upon his/her experience at a national conference, Participant 1 stated that “one of the things we lack in the [local region] is, you know, a network of sexuality educators,” which would allow sexuality educators “to engage and share resources and experience.”

Educational attainment in health or sexuality, such as undergraduate or graduate degrees, were mentioned by eight participants. Nine participants reported being trained to deliver multiple sexuality education curricula. When discussing the curricula for which they are trained, many participants mentioned the importance of those curricula being evidence-based or evidence-informed. When discussing his/her training, Participant 3 stated, “I have been trained in over 12 different evidence-based or evidence-informed curricula that address teen pregnancy or unplanned pregnancy, sexual reproductive health and those types of things.” Overall, ten curricula were identified by the participants, however SHARP, 17 Days, and

Love Notes were most frequently mentioned.

In response to the question asking what additional training or resources the participant needed to improve his/her work as a sexuality educator, facilitation training was cited by five participants. For example, Participant 2 stated, “I feel I was not as ready for like a classroom management, or classroom, like actually facilitating the curriculum, which wasn't taught.” In response to the same question, Participant 4 replied:

Going through that facilitation training more often, maybe like once a month type of thing, and safety procedures, things like that would be really helpful. Especially because I am so new and a lot of our, I would say 15% of my career, my job is actual facilitation.

Three other participants discussed facilitation training, two of whom said they had been trained in facilitation. Many participants also frequently expressed a lack of training for third-party providers of sexuality education at the individual, organizational, and national level. Participant 2 voiced a desire for more training in the following areas:

Answering sensitive questions and being trauma-informed, and really knowing how to handle those kinds of situations. If somebody is experiencing trauma in our classroom, well what do you do as a part of that organization or as a mandated reporter? Those kinds of steps are kind of missing.

Theme #3: Challenges and barriers faced by third-party providers. Participants reported myriad challenges to their positions as sexuality educators, including a lack of confidence in their ability to deliver sexuality education effectively. Four participants reported low levels of confidence regarding specific parts of their jobs as sexuality educators. For Participant 11, training on age-appropriate curriculum delivery would help them to “[be] able to feel confident in how curriculum is best applied for fourth graders versus ninth graders versus adults.” Participant 8 reported a personal “struggle with

graphics just because [students] get nervous in the moment and [they] forget what it's all about." Two participants stated they had high levels of confidence in their ability to deliver sexuality education. For example, Participant 6 discussed about his/her growth and job performance:

I would say now, my knowledge in the field now is a lot greater than when I very first started and that was a little bit of a crutch for me if I'm being honest. So being able to accurately answer shock questions or informative questions, um, you know, I would normally, well when I was first starting, you know, I would normally have to default to other health educators; however, as I'm being more exposed to the field and getting more experience facilitating in a classroom, developing those skills, and the knowledge. Now that I've had more experience under my belt, I'm able to, I'd say, do a pretty great job at what I do, not to toot my own horn.

Reported negative perceptions of organizational performance most frequently related to the curricula or educational content delivered by the organization. The majority of participants specified at least one missing topic areas they believed would improve their organization's curricula and content, including healthy relationships, communication in romantic relationships, positive consequences of sex, LGBTQ+ (Lesbian, Gay, Bisexual, Transgender, Queer) issues, and consent. Participant 7 reported organizational limitations due to partners and funding:

It's limitations within the partners we're serving or even this specific curriculum that we choose to use, and there are many limitations based on the federal funding that we have. Like, so we can only use this evidence-based curriculum, however, they're not appropriate for the age population we're serving.

Additionally, Participant 3 mentioned a limitation with the program availability with their current organization: "once the participant goes through the program, there's no, you know, if you wanted

to come back for more information, there's not another program that we offer them."

When discussing the field of sexuality education, eleven participants reported challenges, including curriculum specifications, political climate, lack of funding, and being male. Participant 7 cited his/her "greatest challenges would probably be the conservative nature of some of the partners that [they] serve," alongside the "general stigma that still remains." Concerning outdated curricula, Participant 1 stated:

A lot of evidence-based programs are, they're old. And they were created by a group of people who, a lot of the researchers of these programs, right, came up in, during a time of the HIV scare, and so you see a lot of that in the programs.

Three participants identified lack of funding or limitations of funding as a negative aspect of the field of sexuality education. Participant 3 stated that "since we are federally funded, we have a lot of limitations on what we can and can't offer." One participant considered being male a challenge because "[male] representation in the field is very limited" and sexual health is "a very woman dominated field."

Theme #4: Programming successes. Participants identified successes related to their personal job performance, their current organization, and the field of sexuality education. Participants discussed successes more frequently than they reported challenges. Three participants made statements about positive feedback they had received as being a success. For example, Participant 12 reported:

From a lot of students, I get feedback that they really like the program and that was information they did not have before. They have misconceptions and myths before, so they are happy to get all of their questions answered in a way that doesn't feel weird to them.

Similarly, Participant 9 reported:

I have received comments in [the classroom] about just thanking me for including anything

about LGBTQ+, the LGBTQ+ community, sexual health, et cetera, or just thanking me for talking about it. [Students] say that I'm welcoming, and people feeling comfortable enough to come up and ask me questions in person, too. So, that definitely makes me feel like I'm doing a good job with it, that I'm at least reaching some people that may not have been reached if I wasn't there.

Additionally, Participant 10 discussed how feedback from teachers made him/her feel successful at delivering sexuality education:

Definitely getting feedback from teachers after we've left classrooms, getting emails or phone calls later on, few weeks, few days later. Just letting us know how great we did, how much the students enjoyed it, and how they continued to ask questions for days after.

Twelve of the thirteen participants mentioned at least one perceived success of their current employer's performance. Specifically, Participant 7 believed the organization has helped shift social norms related to sexuality and health:

I feel like we've shifted social norms. We serve community colleges, and we've shifted social norms on those campuses to see sexual and reproductive health as a normal and very important part of the discussion for students to succeed and attain educational success.

Inclusivity was noted by two participants for being a successful aspect of his/her organization, as Participant 10 specified:

One really positive thing that I have noticed, just with my organization, how we kind of go about our sexual health education especially when it comes to the school corporations and the close work that we do with them is we try to be very inclusive of all kind of standards that are supposed to be met when doing sexuality education, but also trying to make it a more broadened range of ideas.

Additionally, Participant 2 shared a success of his/her organization's program was integration with the schools they served: "We have really

great 'buy in' on our campuses now. We've been hitting solid numbers. We have great data showing that the need is there with these students."

Discussion

Results from this study revealed a disconnect between quantitative and qualitative participant responses regarding their confidence to deliver sexuality education. Despite high quantitative scores on the confidence scale, thematic analysis of qualitative data revealed a lack of self-confidence to effectively deliver sexuality education. Similar to the participants in this study, past research has shown that K-12 health educators quantitatively report high confidence in their ability to teach sexual health (Fisher & Cummings, 2016; Herr, Telljohann, Price, Dake, & Stone, 2012; Tietjen-Smith, Balkin, & Kimbrough, 2014); however, qualitative analyses, as in the present study, suggest a lower level of confidence among educators (Klein & Breck, 2010). Research on teacher confidence in delivery of sexuality education is limited and research on confidence on third-party providers is nearly non-existent. This study is among the first to explore confidence among third-party providers and the results suggest a discrepancy among quantitatively and qualitatively reported confidence: Further research is recommended to further explore this discrepancy.

Sexuality educators in this study identified personal experiences during childhood or adolescence as a common career motivator. Participants mentioned a lack of sexuality education as well as observing peers or friends experiencing consequences of risky sexual behavior: For many participants, these personal experiences led them to seek information on sexual health to properly educate themselves and their peers. These reported experiences are consistent with Centers for Disease Control and Prevention (CDC) reports that teen pregnancy rates in the U.S. are significantly higher than other westernized nations and STI rates have recently increased (from 2016 to 2017) in the U.S. (CDC, 2017; CDC Newsroom, 2017).

Despite the absence of a standardized formal training for sexuality educators, the participants in this study reported utilizing educational attainment, training within their organization, and additional external trainings to improve increase their sexuality education skills. The reports of receiving internal training from their current organization aligns with a recent investigation with youth development professions (McCarthy et al., 2015). Participants in this study expressed a desire for more continuing education opportunities to further develop their efficacy to deliver effective programming. This result adds to the literature suggesting sexuality educators need more diverse and in-depth training (Eisenberg et al., 2011), especially since no certifications are currently required to teach sexuality education (Barr et al., 2014).

Participants cited funding as a major challenge, particularly the lack of predictability of grant funding and restrictions frequently placed on curricula by funding partners. These findings align with previous research that reported financial barriers to delivering sexual health education to students (Eisenberg et al., 2013). Despite these financial constraints, participants perceived their work had a positive impact on communities and individuals.

Third-party sexuality educators in this study expressed feeling constrained by limited content and curricula and a desire to expand topics covered in their programs to include healthy relationships, communication in romantic relationships, positive consequences of sex, LGBTQ+ issues, and consent. Prior investigations of sexuality and sexual health education programs revealed content typically focused on disease prevention and unwanted pregnancies but failed to address more controversial topics (Elia & Tokunaga, 2015). Participants in the current study have provided valuable insight into what controversial topics are most relevant to their populations. These suggestions are in line with recent recommendations that adolescent sexuality education should be through evidence-based curricula (Bruener, Mattson, Committee

on Adolescence, & Committee on Psychosocial Aspects of Child and Family Health, 2016).

Limitations

Given the qualitative design of this study, findings were not intended to be generalizable to other third-party sexuality educators. Results may be further limited because most participants were from [location blinded]; however, no differences were found for participant responses based on geographic location. Recruitment barriers may have contributed to the small sample in this study as sexual health educators are often hesitant to participate in research (Blaisdell & Olsen, 2019). The researchers contacted multiple organizations across several states, but many declined to participate, indicating a self-selection bias.

Additionally, most study participants were relatively young and in the early stages of their careers as sexuality educators and this may have influenced the responses received. Responses from more experienced sexuality educators might have been substantially different. Future research should examine the efficacy of third-party sexuality educators with a more robust sample. To accommodate the participants, many interviews took place during lunch hours or other time-limited circumstances: The timing of the interviews might have affected the participants' likelihood to elaborate on answers. It is important to acknowledge that the information obtained from this study was self-reported by the participants, although no signs of deception were detected by the research team.

Implications for Future Research and Practice

Results from this study have valuable implications for future sexuality education research. Personal experiences may be a significant motivation for individuals to pursue a career in sexuality education. Future qualitative research studies should further examine the common personal experiences that contribute to the development of sexuality educators and investigate possible links between motivating factors and educator efficacy.

Another implication of this study is for the development of standardized training for sexuality education and improvements of sexual health education curricula. While there are many barriers to creating and establishing training programs and new evidence-based curricula, there are potential connections between sexuality educator training and curricula content and program efficacy. Developers of future sexuality education programming should further investigate the gaps in training and materials being delivered.

Quantitative research might be important to further establish a knowledge base regarding the general experience of sexuality educators and typical demographic distributions of this population. Another qualitative research study may allow for a deeper understanding of sexuality educators, which may allow third-party organizations to recognize the typical qualities of capable and high-quality sexuality educators.

References

- Ailey, S. H., Marks, B. A., Crisp, C., & Hahn, J.E. (2003). Promoting sexuality across the life span for individuals with intellectual and developmental disabilities. *Nursing Clinics of North America*, 38(2), 229-252.
- Barr, E., Goldfarb, E., Russell, S., Seabert, D., Wallen, M., & Wilson, K. (2014). Improving sexuality education: The development of teacher-preparation standards. *Journal of School Health*, 84(6), 396-415.
- Blaisdell, A. J., & Olsen, L. K. (2019). Barriers to human sexuality education survey research among Vermont public school administrators. *Journal of School Health*, 89(2), 124-128.
- Bouris, A., Mancino, J., Jagoda, P., Hill, B. J., & Gilliam, M. (2016). Reinvigorating adolescent sexuality education through alternate reality games: The case of "The Source". *Sex Education: Sexuality, Society and Learning*, 16(4), 353-367
- Bruener, C. C., Mattson, G., Committee on Adolescence, & Committee on Psychosocial Aspects of Child and Family Health. (2016). Sexuality education for children and adolescents. *Pediatrics*, 138(2).
- CDC. (2017) *Reproductive health: Teen pregnancy*. Retrieved from <https://www.cdc.gov/teenpregnancy/about/index.htm>
- CDC Newsroom. (2017). *STDs at record high, indicating urgent need for prevention*. Retrieved from <https://www.cdc.gov/media/releases/2017/p0926-std-prevention.html>
- Curtis, A. (2017). Why sex education matters for adolescents with autism spectrum disorder. *American Journal of Nursing*, 17(6), 11.
- Drake, P. M., Firpo-Triplett, R., Glassman, J. R., Ong, S. L., & Unti, L. (2015). A randomized-controlled trial of the effects of online training on implementation fidelity. *American Journal of Sexuality Education*, 10(4), 351-376.
- Eisenberg, M. E., Madsen, N., Oliphant, J. A., & Resnick, M. (2011). Beyond the call of duty: A qualitative study of teachers' additional responsibilities related to sexuality education. *American Journal of Sexuality Education*, 6(3), 247-259.
- Eisenberg, M. E., Madsen, N., Oliphant, J. A., & Sieving, R. E. (2013). Barriers to providing the sexuality education that teachers believe students need. *Journal of School Health*, 83(5), 335-342.
- Elia, J. P., & Tokunaga, J. (2015). Sexuality education: Implications for health, equity, and social justice in the United States. *Health Education*, 115(1), 105-120.
- Fisher, C.M., & Cummings, C.A. (2016). Assessing teacher confidence and proficiency with sexuality education standards: Implication for professional development. *Pedagogy in Health Promotion*, 2(2), 101-107.
- Gilliam, M., Jagoda, P., Heathcock, S., Orzalli, S., Saper, C., Dudley, J., & Wilson, C. (2016). LifeChanger: A pilot study of a game-based curriculum for sexuality education. *Journal of Pediatric and Adolescent Gynecology*, 29(2), 148-153.

- Goldman, J. D. G. (2011). External providers' sexuality education teaching and pedagogies for primary school students in grade 1 to grade 7. *Sex Education: Sexuality, Society and Learning*, 11(2), 155-174.
- Green, E. R., Hamarman, A. M., & McKee, R. W. (2015). Online sexuality education pedagogy: Translating five in-person teaching methods to online learning environments. *Sex Education*, 15(1), 19-30.
- Herr, S. W., Telljohann, S. K., Price, J. H., Dake, J. A., & Stone, G. E. (2012). High school health education teachers' perceptions and practices related to teaching HIV prevention. *Journal of School Health*, 82(11), 514-521.
- Holstrom, A. M. (2015). Sexuality education goes viral: What we know about online sexual health information. *American Journal of Sexuality Education*, 10(3), 277-294.
- Klein, N. A., & Breck, S. E. (2010). "I wish I had known the truth sooner": Middle school teacher candidates' sexuality education experiences. *Research in Middle Level Education*, 33(6), 1-10.
- McCarthy, M. A., Fisher, C. M., Zhou, J., Zhu, H., Pelster, A. K., Schober, D. J., ... Goldsworthy, R. (2015). A qualitative exploration of community-based organization programs, resources, and training to promote adolescent sexual health. *American Journal of Sexuality Education*, 10(4), 316-332.
- McRee, A., Madsen, N., & Eisenberg, M. E. (2014). Guest speakers in school-based sexuality education. *American Journal of Sexuality Education*, 9(2), 205-218.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation* (4th ed.). San Francisco: Jossey-Boss.
- Ott, M. A., Rouse, M., Resseguie, J., Smith, H., & Woodcox, S. (2011). Community-level successes and challenges to implementing adolescent sex education programs. *Maternal & Child Health Journal*, 15(2), 169-177.
- Roberts, K., Dowell, A., & Nie, J. (2019). Attempting rigour and replicability in thematic analysis of qualitative research data; a case study of codebook development. *BMC Medical Research Methodology*, 19(1).
- Schaafsma, D., Kok, G., Stoffelen, J. M. T., & Curfs, L. M. G. (2015). Identifying effective methods for teaching sex education to individuals with intellectual disabilities: A systematic review. *Journal of Sex Research*, 52(4), 412-432.
- Swango-Wilson, A. (2011). Meaningful sex education programs for individuals with intellectual/developmental disabilities. *Sexuality & Disability*, 29(2), 113-118.
- Tietjen-Smith, T., Balkin, R., & Kimbrough, S. (2014). Knowledge and teaching confidence of educators about sexual health topics. *National Forum of Teach Education Journal*, 24(3), 1-9.
- Tortolero, S. R., Markham, C. M., Peskin, M. F., Shegog, R., Addy, R. C., Escobar-Chaves, S. L., & Baumler, E. R. (2010). It's Your Game: Keep It Real: Delaying sexual behavior with an effective middle school program. *Journal of Adolescent Health*, 46(2), 169-179.
- Workman, L. M., Flynn, S., Kenison, K., & Prince, M. (2015). Adoption of an evidence-based teen pregnancy prevention curriculum: A case study in a South Carolina school district. *American Journal of Sexuality Education*, 10(1), 70-85.
- World Health Organization. (2011). *Sexual health throughout life*. Retrieved from <http://www.euro.who.int/en/health-topics/Life-stages/sexual-and-reproductive-health/news/news/2011/06/sexual-health-throughout-life>