

Cultivating a New Learning Community to Prepare Graduate Students in Cardiovascular Epidemiology: The Jackson Heart Study

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Abstract

Objective: To describe a learning community (LC) used in the Jackson Heart Study (JHS) to train graduate students in cardiovascular epidemiology. **Methods:** In 2013, the JHS Graduate Training and Education (GTEC) was implemented at Jackson State University with responsibilities to develop a training program to provide opportunities for scholars to acquire professional expertise in public health and biomedical research. **Results:** GTEC developed a LC environment where graduate students can be exposed to academic training and expert mentoring to prepare them for a future in CVD research. **Conclusions:** This type of training opportunity is important for Mississippi, a state with one of the highest prevalence of CVD. To decrease morbidity and mortality by increasing the availability of well-trained public health and biomedical professionals, we concluded that well-organized learning communities can substantially increase competency, success, and overall professional proficiency.

Keywords

Graduate Training, Jackson Heart Study, Cardiovascular Epidemiology, Learning Community

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1. Introduction

An emerging trend in the structure of major research studies is the utilization of a graduate training center to build capacity among graduate students as a way to, not only augment the contributions of research studies to communities and institutions, but also to ensure the development of competent professionals. These graduate students train to become part of a new breed of experts with the aspiration and capacity to address community health concerns upon graduation from their respective disciplines and to have immediate impact in their chosen career destination [1]. The Jackson Heart Study (JHS), funded by the National Heart, Blood, and Lung Institute (NHLBI), implemented the first Graduate Training and Education Center (GTEC) attached to a major study at Jackson State University, located in Jackson, Mississippi. The JHS GTEC is currently housed in the

School of Public Health at Jackson State University. The major objectives of GTEC are to (1) establish a graduate level training program concentrated on cardiovascular epidemiology research, and (2) establish mentoring teams to oversee efforts by graduate students to analyze, present, and publish their research [1]. GTEC utilizes the learning community (LC) structure to accomplish its objectives.

Many professional training institutions seek to improve student achievements using a collaborating network that utilizes a learning community structure. The establishment of a learning community offers a unique type of professional development ensuring that students are exposed to theoretical knowledge with simultaneous opportunity for practical application of the theory. The JHS GTEC's LC is equipped to provide collective and comprehensive learning and application, as well as shared personal practice in a supportive learning environment.

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Blankstein proposed six principles that are essential for schools with professional learning communication [2]:

1. Principle 1 - Common mission, vision, values, and goals;
2. Principle 2 - Ensuring achievement for all students;
3. Principle 3 - Collaborative teaming focused on teaching and learning;
4. Principle 4 - Using data to guide decision making and continuous improvement
5. Principle 5 - Gaining active engagement from family and community; and
6. Principle 6 - Building sustainable leadership capacity.

The JHS GTEC expects that the pool of graduate students selected to participate in the learning community activities will become immersed in those principles as they develop proficiency to facilitate the elimination of health disparities in the State of Mississippi, as well as to inspire the improvement of cardiovascular health among Mississippi communities, the US, and the world, particularly in communities that have a preponderance of cardiovascular disease problems. The expectation is that the program continues to be characterized by a knowledge-building process of trust, collaboration and participation that will result in the enhancement of expertise in graduate students who can advance to meet future societal needs regarding health care, public health, and biomedical concerns. The purpose of this manuscript is to describe the LC as developed by the JHS GTEC, provide background information about its development, and identify the opportunities made available to the graduate students selected for the Daniel Hale Williams Scholar Program (DHWSP) to engage in LC experiences.

2. Methods

In 2013, the Jackson Heart Study (JHS) Graduate Training and Education Center (GTEC) was instituted as the first and only center in a major government funded research study that was implemented to train graduate students in cardiovascular epidemiology. This center was initiated at Jackson State University, Jackson, Mississippi and is currently housed in the School of Public Health. The staff of the JHS GTEC then explored strategies for putting together the members of the LC, comprising the students, the instructors, and the mentors, along with the responsibilities [1].

2.1. Components of the Learning Community

LCs are effective learning groups sharing a common purpose that includes direct participation in classroom and social

interactions, pursuit of individual and group learning opportunities in an integrated setting, involvement in placed-based cultural service learning, unified into a holistic learning experience [3]. The challenge of the JHS GTEC program rests in its ability to design thriving, innovative, educational paths that nurture and inspire superior and proficient outcomes at the individual, group, and institutional levels. This LC promotes scholarly training driven by collaboration, interdisciplinary study, and experiential learning [4]. The LC at the JHS GTEC provides a safe environment for building trust while facilitating learning and professional development, providing opportunities for scholar coaching, and making available an enduring resource network.

There are specific strategies for developing a well-functioning LC [5]. The LC of the JHS GTEC comprises a deliberately structured curriculum designed to meet the educational objectives of the DHWSP cohorts of students. This curriculum promotes collaborative learning that is accomplished through building relationships between instructors, students, mentors, and staff. In the same manner as Virtue's proposition [6], the JHS GTEC promotes learner centered instruction, stressing continuity. The instructor serves as the facilitator and guide through the cardiovascular epidemiology enrichment training, and the mentor provides guidance through the research development phase. All of this is designated to take place over a two year period. According to Sai and Siraj [7], LCs structure curriculum to support and enhance academic relationships between and among teachers and student learners over a sustained period of time. This learning design promotes effective learning and creates a sense of academic family cooperation and closeness between students, instructors, mentors, and the GTEC staff [8-10].

2.2. Recruitment of Students

The JHS GTEC Daniel Hale Williams scholars are recruited as cohorts, forming an effective professional learning environment that enables the educators to develop the knowledge, skills, practices, and dispositions that confirm that the scholars learn and achieve at high levels [11]. The JHS GTEC plays a critical role in preparing its graduate scholars through this cohort structure, leading the local and national efforts that can potentially improve health among communities. By creating a dynamic public health training landscape, the JHS GTEC is positioned to equip scholars with the capacity to facilitate health care system improvements, enhance population health, and reduce medical costs in the future [12]. The JHS GTEC's definition of the DHWSP cohort incorporates a process proposed by many experts in the field. For each cohort in the DHWSP, the students start together, go through a set of activities together, and end together, as

proposed by several researchers [13-18]. In addition, the JHS GTEC makes a deliberate attempt to build among the cohorts a sense of family, with strong community cohesion as proposed by other researchers [19, 20].

2.3. Benefits of the JHS GTEC Learning Community

The research suggested that among the benefits of the LC are academic and psychological safety and support. In order for a cohort to work, the following five elements are critical: 1) keeping an academic focus, 2) pulling one's own weight, 3) taking care of the community, 4) communicating concern about other members, and 5) conveying respect. These conditions would set the stage for creating a well-functioning cohort that has good communication skills, shared common goals, accepted differences and respect for one another, and willingness to work in a group.

The JHS GTEC brings expertise in adult learning, mentoring, and graduate training in social, behavioral, and clinical sciences, epidemiology, and cardiovascular disease; students interact regularly with experienced investigators who have a deep familiarity and engagement with the JHS and the state-of-the-art research resources and infrastructure that would ultimately equip them for success.

The JHS GTEC utilizes its empirically tested learning model to develop, implement, and evaluate the two-year graduate program in cardiovascular epidemiology, with an emphasis on social epidemiology and health disparities. Upon completion of this program, students will receive a certificate of completion.

2.4. Selection of Students and Program

Students are eligible to apply for this innovative training program if they are full-time students in good standing and enrolled in Psychology, Sociology, and Public Health graduate programs at Jackson State University and in Medicine, Nursing, Pharmacy, and Dentistry at the University of Mississippi Medical Center. The selected students participate in prescribed activities that provide a strong grounding in epidemiology, cardiovascular disease, health disparities, and professional development to increase the likelihood of African American graduate students entering careers in biomedical sciences. All course offerings are held in the Jackson Medical Mall, where the School of Public Health at Jackson State University and the Jackson Heart Study are located.

The overall goals of the JHS GTEC are to: (1) enrich the educational experiences and skills of African American graduate students to prepare them for future careers in academics, industry, and government research settings; (2)

enhance the professional skills of graduate students to increase the likelihood of success and completion of graduate school; and (3) increase the interest in, and likelihood of, African American graduate students entering careers in biomedical sciences following degree and program completion. The JHS GTEC is dedicated to achieving these goals by engaging the affiliated faculty, staff, mentors, and institutional leaders. This team represents a diverse group of multidisciplinary educators with the depth of experience, dedication, and commitment to the provision of education and research training for graduate students to advance cardiovascular research and improve the quality of health care delivery for underserved and vulnerable populations.

In the state of Mississippi, the prevalence and incidence rates for obesity and cardiovascular diseases are the highest in the nation. The availability of an enrichment graduate education program in the School of Public Health at Jackson State University is essential and critical for developing the type of expertise needed to maintain healthy Mississippi communities. It is this type of cognitive intervention fused with strong mentoring and training that allows for a successful health intervention and subsequent transformation of the health status of African Americans in Mississippi.

3. Results

Since its inception, the DHWSP has emerged as an interdisciplinary, enrichment, and research program that provides opportunities for students to participate in an advanced cardiovascular epidemiology curriculum, while developing and concentrating on their research interest. This program places strong emphasis on the application of theoretical knowledge acquired through the enrichment courses to hypothesis driven real research situations using data collected from the JHS cohort. The DHWSP uses a *student-centered, mentor-driven, and problem-oriented* approach to student development.

1. Student-Centered: Students develop a topic or general area of research interest. The JHS GTEC leadership does not dictate an interest or topic; however, staff is available to help students navigate the JHS research domain, to become oriented with the wealth of data available for research. The JHS GTEC staff works with the students to shape and finalize their particular interests as they prepare to initiate and conduct a research study.
2. Mentor-Driven: Students are assigned a mentor who is a JHS investigator familiar with the JHS data. They schedule regular meetings with their mentors to advance the research interests of their choice through the phases, from title development to conference presentations to journal publication. The mentors guide the students

throughout the two year duration of the program, and remain available to provide assistance as needed beyond graduation.

3. **Problem-Oriented:** The JHS is dedicated to examining cardiovascular disease and its risk factors; the research topics the students develop are based on examining risk factors for development of CVD and CVD outcomes among African Americans. They are taught the importance of their responsibility to become a part of the team dedicated to eliminating health disparities through their research efforts.

Some of the benefits of the JHS GTEC LC are as follows:

1. Building productive relationships that are required to collaborate, partner, reflect, and act to carry out student professional development and capacity building;
2. Engaging educators at all levels in collective, consistent, and context-specific learning;
3. Addressing inequities in teaching and learning opportunities by supporting faculty who work with students requiring the most assistance; and
4. Promoting efforts initiated by the scholars to facilitate their continuing practice and learning.

Planning is important for professional development to reduce the possibility of gaps and redundancies in the training provided by the LC. The JHS GTEC conducts periodic evaluation of the program to ensure efficiency of operation, looking specifically at the concepts of time, organization, relevance, and follow up that are critical for meaningful professional development. Feedback and follow up ensure effectiveness with implementation of professional development. As proposed by Vanblaere and Devos [21], the JHS GTEC recognizes the value of continual interaction with the mentors who have the opportunity to discuss the importance and relevance of their contribution. The JHS GTEC represents a new perspective for the development of epidemiology expertise needed to work in multidisciplinary teams in public health and biomedical science [22]. It is this need that led to the search for new forms of training that resulted in the innovative dimension of integrating and training students from JSU and UMMC in cardiovascular epidemiology.

4. Discussion

One purpose of this article was to make a compelling case for the use of LCs, while outlining the outcomes of the JHS GTEC efforts to enhance student learning and professional practice. Public health professionals have begun to fully appreciate how beneficial the LC can be for graduate

students in cardiovascular epidemiology by providing quality education and leadership in public health and biomedical research techniques that can contribute towards improved community-based research and practice [1]. In addition to raising awareness of important public health concerns through their exposure to the JHS data, the JHS GTEC has exposed the scholars to the best possible education in the form of experienced-based learning. Graduate students develop an understanding of their role in their own learning because the JHS GTEC LC is student-based and places strong emphasis on enhancing student autonomy, critical thinking, and self-reliance.

Managing a LC does not come without challenges. With the challenges come opportunity for growth and decisions. To deal with challenges that occur, the JHS GTEC's LC members are encouraged to incorporate Kanter's [23] set of "commitment mechanisms". They are as follows:

1. *Sacrifice:* Members must be reminded that for the LC to succeed, they have to be prepared to give something up.
2. *Investment:* LC members must be committed to the community and the success of the team and its members.
3. *Renunciation:* Individual LC members must evaluate their practices and commit to adjust those parts of their pasts that could interfere with the life of the community.

These are all important traits of communities that come together with the common purpose of creating rewarding professional development opportunities for the scholars, like those enrolled in the DHWSP. These represent the philosophies of practice adopted for the JHS GTEC, and adherence to these philosophies increase the probability of success and should be utilized more widely in other professional development programs.

The Sullivan report pointed out that, in order to succeed in preparing, recruiting, retaining, and graduating minority medical students, the culture of health professional schools must change [24]. Schools that educate and train students in public health and biomedical sciences must provide avenues to reduce the structural and institutional barriers, biases, discrimination, isolation, inaccessibility of mentors, stereotyping, and, ultimately, early burnout that have affected racial/ethnic minority graduate and medical students who aspire to a career in the biomedical profession. The JHS GTEC strives to create a climate of equity at Jackson State University, to improve educational and professional opportunities for African American public health and biomedical graduate students. As Andrade reported, LCs have the potential to have positive effects on student achievement and satisfaction [25]. The JHS GTEC has initiated and is sustaining the student-centered facilitation

practices of the LC by providing experiential processes to ensure that the students are actively engaged in all aspects of their learning experience.

5. Conclusion

In addition to the enrichment curriculum, through the LC, the JHS GTEC scholars benefit from exposure to experienced local and national investigators who guide them through exercises in data analysis, data management, manuscript development and journal publication. Some of the scholars have benefitted from placement in research internships at national research organizations, training through the GTEC quarterly seminars, and participation in Brown Bag luncheons where they present their research ideas and are given feedback that will assist them as they embark upon their hypothesis testing and statistical analysis phase of their research. The JHS GTEC LC model also provides opportunities for the scholars to participate in the JHS Community Outreach Center's annual community events. Well organized LCs can lead to a strong graduate student collective efficacy, which translates to acquisition of applicable, relevant professional proficiency.

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