THE RELATIONSHIP OF THE DIMENSIONS OF THE LEARNING CULTURE AND PARTICIPATION IN PROFESSIONAL DEVELOPMENT OF PUBLIC HEALTH PROFESSIONALS

by

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(Under the Direction of Jessica Muilenburg)

ABSTRACT

Continuing Professional Education (CPE) is entering the third era in which education and learning occur in a workplace. The concept of learning in the profession is believed to lead to the improvement of job performance of public health professionals. However, little research has been done to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals. All data were collected from December 2013 to February 2014 using online survey. The final sample used for analysis consisted of 172 public health professionals in the database of The Georgia of Public Health Training Center (GPHTC). The results from this study suggested that most public health professionals participated in available formal, informal, and incidental learning opportunities in their organization to advance in their professions. The results also suggest that the participants mostly considered the learning culture in their organization as high at individual, team/group, and organizational level. These perceptions of learning culture of public health professional are significantly correlated with their participation in the informal and incidental learning activities.

INDEX WORDS: Public health professionals, Professional learning, DLOQ, Formal learning, Informal learning, Incidental learning, Continuing professional education, Online survey

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DEDICATION

I would like to dedicate this dissertation to my mother and my husband. My mother's continuous love, pray, and encouragement provide motivation throughout my study. My husband's continuous love, sacrifice, and support help me from the start until the end of my doctoral program.

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CHAPTER 1

INTRODUCTION

1.1. Statement of the problem

Currently, at least 250 academic programs that exist in colleges and universities aim to educate professional public health professionals. More than 12,000 professionals from these colleges and universities have received the designation of Certified Health Education Specialist (CHES) nationwide (National Commission for Health Education Credentialing [NCHEC], 1996). Public health professionals need to continue learning in the profession. However, studies show most public health professionals do not engage in activities that can enhance their professional development. Therefore public health professionals are not yet prepared to meet the challenge of ensuring the quality of practice in the context of rapid social change (Allegrante, Moon, Auld, & Gebbie, 2001).

There are many opportunities for public health professionals to engage in learning in the profession. These learning opportunities may be conducted formally by particular organization, but some may be experienced as informal or incidental learning in the workplace. According to Marsick and Watkins (1990), formal, informal and incidental learning are distinguish based on the degree of control by the learner. Formal learning is typically highly structured, a classroom-based, and organized by a particular organization (Marsick & Watkins, 1990). Informal learning can be encouraged by organization but mostly occur in daily life where individual learn from and through experience in particular situation (Marsick & Watkins, 1990). Incidental learning is a

subcategory of informal learning that almost always takes place in everyday experience as a byproduct of another activity (Marsick & Watkins, 1990).

Formal learning opportunities are commonly organized by organizations or educational providers in the form of education and training to enhance specific skills of public health professionals. These formal learning opportunities may be designed as conferences and seminars organized by professional associations of public health professionals. One of the biggest conferences for public health professionals is the annual conference organized by the American Public Health Association (APHA). The APHA conference is held annually in different cities across the United States. There are annual meetings and conferences for the public health field that are also available locally. In the state of Georgia, the Georgia Public Health Association (GPHA) and the Georgia Rural Health Association (GRHA) held the annual meetings and conferences for public health professionals. Some of these seminars or conferences may also targeted specific field in public health. For instance, the Society of Public Health Educators (SOPHE) that facilitates up-to-date information for public health educators only for those professionals who were interested in public health education field.

The seminars, conferences, education and training that organized by educational providers or professional associations of public health professionals are identified in this study as the formal form of Continuing Professional Education (CPE) activities. The original definition of CPE is any "Educational experiences that assist in the development or enhancement of the knowledge and skills directly related to the individual's professional occupation." (NCHEC, 2013b). However, most CPE today has been perceived as "a means to an end for regulating the practice, often in combination with licensing bodies and professionals societies." (Cantor, 2006, p. 15). This is supported by Desikan (2009) who found in his study that most CPE have been

perceived as those formal educational activities that are highly structured in facilitating the information update, re-certification, and re-licensure. In the field of public health, CPE is also commonly perceived as those formal educational programs for public health professionals and mandated for those who wished to maintain their professional certification. Therefore, in this study, the term CPE will be used to describe these formal learning opportunities for public health professionals.

The fact that CPE is an intentional, ongoing and a systematic process makes CPE a significant factor in support of the improvement of public health professionals' practice (Cervero, 2003). Over the years, researchers have conducted evaluations to ensure the improvement of knowledge, attitudes, and skills in public health professionals' job performance after participating in educational activities in CPE (Adelson, Watkins, & Caplan, 1985). This improvement of the knowledge, attitudes, and skills allow health professionals to provide the best services to their community (Green, 1984).

Despite the advantages offered by CPE, a study by Johnson, Glascoff, Lovelace, Bibeau, and Tyler (2005) found that over 60% of public health professionals did not conduct research or participate in professional development activities due to various reasons. The heavy workload, cost to participate, lack of administrative support, child care and home responsibilities are some of the barriers that resulted in low participation in CPE activities (Bower, Choi, Becker, & Girard, 2007; Schweitzer & Krassa, 2010). Due to the multiple challenges of attending CPE and the advantages of learning in real-time situations in dealing with vast public health issues in the community, the idea of informal and incidental learning is discussed in the next section as a significant aspect of continuous learning for public health professionals that complement the formal learning in CPE.

Public health professionals experience informal or incidental learning in the workplace during their daily practice from within or outside the organizations. According to Marsick and Watkins (1990, p. 7 & 14), informal learning is ". . . . predominantly experiential and non-institutional . . . . [and takes place in] . . . . the normal course of daily events without a high degree of design or structure." Public health professionals learn and share knowledge among each other so they can improve their job performance (Pereles, Lockyer, & Fidler, 2002). A study by Pereles et al. (2002) also found that within this informal learning community, members appeared to be supportive to enhance each other's learning. Informal learning also encourages members to freely give opinions to agree or disagree rather than focuses on the "right" answer or achieve a consensus (Pereles et al., 2002).

The formal, informal and incidental learning transform the knowledge, beliefs and behaviors of public health professionals in their professional practices. Through the interactions in the workplace, these changes of knowledge, beliefs and behaviors affect the learning at group or team level that eventually influence the learning at organizational level. The organization that learns continuously and transforms itself is defined as a learning organization (Watkins & Marsick, 1993).

In a learning organization, individual learning and organizational learning influence each other. Individual learning enhance the organizational learning by scanning the environment and using the information gathered to make a better decision (Watkins & Marsick, 1993). Alternatively, learning organizations encourage public health professionals to put together their learning into practice. As Watkins and Marsick (1993, p. 195) stated that "Learning organizations depend on the participation of many individuals in a collective vision and on the release of the potential locked within them." In addition, Wanto and Suryasaputra (2012)

mentioned in their article that a learning culture can be developed in a learning organization to support the continuous learning in the workplace. Literatures showed that professionals need to continue learn in the profession and organization need the learning culture to foster professional development of professionals. However, there are only few studies that have been conducted to understand the role of the learning culture and the participation in professional development of public health professionals.

1.2. Purpose of the Study

The multidisciplinary background of public health professionals influences the need for learning in Continuing Professional Education (CPE). Although CPE include any educational activities, CPE is the common term used to describe only formal learning opportunities in public health field. In addition to formal learning in CPE, public health professionals also experience informal and incidental learning in the workplace that influence the changes in their professional practice. This study is also interested in the relationship of the dimensions of the learning culture and participation in professional development of public health professionals.

Any research study begins with construction of research purpose that shows the gaps or a lack of understanding of a particular topic of interest (deMarrais, 2007). Since this study is concerned with learning opportunities to foster the professional expertise in public health field, the purpose of this study is to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals. The following are the research questions for this study:

1. To what extent do the public health professionals participate in formal, informal and incidental learning for professional development?

2. How do public health professionals describe the learning culture at their organization at individual, team, and organizational levels?
3. To what extent does perception of a high learning culture relate to high levels participation in formal, informal and incidental learning among public health professionals?

CHAPTER 2

LITERATURE REVIEW

2.1. Public Health Professionals

Public health field has been recognized in the United States since 1900s. In the period of 1900-1945, public health has narrowed interest than today (Wilner, 1973). During 1900s, public health interested in measuring communicable diseases, educating community about selected illnesses, handling food and water, recording vital statistic, and treating diseases (Wilner, 1973). Today, public health field covers almost every preventive aspect of health. According to American Public Health Association [APHA] (n.d, p. 1), public health is "the practice of preventing disease and promoting good health within groups of people, from small communities to entire countries." Public health professionals come from a variety of backgrounds and work in a variety of settings with the common goal of promoting population health (Gebbie, Rosenstock, & Hernandez, 2002). American Public Health Association [APHA] (n.d) also stated that public health professionals come from many educational background with the common purpose of protecting the health of a population by relying on policy and research strategies to understand issues in particular populations.

Today, public health is everybody's concern. Health and illness are part of life, but people should be educated about preventing some of these health problems. Especially when more people are exposed to polluted environment or live a certain lifestyles that can cause health problems to themselves or to their community. In the past decade, many efforts have been conducted toward improving the health of individuals and communities through health education

efforts. Health education efforts are not only conducted in schools but also in public spaces, such as grocery stores, public transportation, and many more. These efforts may vary depending on the urgency of the messages that need to be delivered in these public places. A reminder to wash one's hands in a public restroom is one of simplest health education efforts that have been conducted to raise public awareness of personal hygiene.

One of the prominent professions in public health field that concerns about educating the individuals and communities to promote health and preventing diseases is called public health educators. Public health educators are drawn from a diverse range of disciplines and backgrounds and may or may not have formal qualifications in the field (i.e., no professional preparation or post-graduate qualifications in health education). Public health educator is defined as "a professionally prepared individual who serves in a variety of roles and is specifically trained to use appropriate educational strategies and methods to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities" (Joint Committee on Health Education and Promotion Terminology, 2002, p. 6). According to this definition, public health educators serve the community through education efforts to improve the health status of the community.

As professionals, public health educators are also bound with responsibilities that were established since 1985. In 2004, The National Health Educator Competencies Update Project (CUP) Model, which was funded by the American Association for Health Education (AAHE), the National Commission for Health Education Credentialing (NCHEC), and the Society for Public Health Education (SOPHE) revised the seven areas of responsibilities for public health educators (NCHEC, 2013c). The Competencies Update Project that was conducted from 1998-2004, addressed what health educators currently do in practice; the degree to which the definition

of the entry-level health educator is role remains up-to-date; and the validation of advanced-level competencies (Gilmore, Olsen, Taub, & Connell, 2005). These seven areas of responsibilities, each of which has its own competencies, are (NCHEC, 2013c):

Area of responsibility I: Assess needs, assets and capacity for health education

Area of responsibility II: Plan health education

Area of responsibility III: Implement health education

Area of responsibility IV: Conduct evaluation and research related to health education

Area of responsibility V: Administer and manage health education

Area of responsibility VI: Serve as a health education resource person

Area of responsibility VII: Communicate and advocate for health and health education

Although these areas of responsibilities have the same importance in public health educators' professional works, the literatures showed that many studies tend to address problems or competencies related to responsibilities I (Assess needs, assets and capacity for health education) and IV (conduct evaluation and research related to health education), and only few address issues or competencies related to responsibilities VI (Serve as a health education resource person) (Clark, Ogletree, McKenzie, Dennis, & Chamness, 2002). In regard to the competencies that public health educators need to possess in order to perform their professional duties in the areas of responsibilities, research has been conducted to assess the importance of each competency that relates to their actual role. A study by Gilmore et al. (2005) showed that public health educators perform all 163 sub-competencies and all of these sub-competencies are important to their current job description. Another study by Davidson (2008) reported that the following competencies are most relevant to their jobs: demonstrating a variety of skills in delivering strategies, interventions, and programs; using a variety of methods to implement

strategies, interventions, and programs; initiating a plan of action; and using health-related information resources. The same study also reported some of the skills that many public health educators feel are lacking, including data-collection instruments, securing fiscal resources, interpreting evaluation and research results, carrying out evaluation and research plans, and developing plans for evaluation and research (Davidson, 2008). Many other studies also report a variety of skills that are needed by public health educators for their professional work. Some examples of the skills needed by public health educators are business skills, program coordinator skills, and human resources skills (Becker & Loy, 2004), cultural competency (Luquis, Perez, & Young, 2006); ethics (Coughlin, Katz, & Mattison, 1999; Schmaling & Blume, 2009; Shive & Marks, 2008); and advocacy (Galer-Unti & Tappe, 2006; Radius, Galer-Unti, & Tappe, 2009).

The different needs of public health educators related to their competencies create challenges for the educational providers to include them all in one single continuing professional education activity. Furthermore, the Center of Disease Control (CDC) proposed genomic competencies to be added to the current competencies of public health educators. The need to expand the expected skills of public health educators was revealed in a study by Chen and Goodson (2007). Although the participant in the study have negative attitudes, low awareness, and deficient genomic knowledge, the study shows that expected skill competencies of public health educators have expanded and corresponding curriculum adjustments are needed (Chen & Goodson, 2007).

In addition to competency substance, varying demographic backgrounds, including education and discipline of public health educators, warrant some basic standards of practice. A study by Glascoff, Johnson, Glascoff, Lovelace, and Bibeau (2005) showed that most public health educators in North Carolina are white females; most do not have Certified Health

Education Specialist (CHES); younger health educators are more likely to have health education degrees; and almost two thirds of public health educators have administrative responsibilities. Another study by Finocchio, Love, and Sanchez (2003) showed that in the San Francisco Bay Area, there were four MPH health educators per 100,000 persons in 1999, and the majority worked in local health departments and community-based organizations.

The professional associations ensure that public health educators maintain their professional credibility by addressing the multiple needs or matters that public health educators experience in their professional work. Public health educators state that the main reasons why they become members of a professional organization are the ability to maintain CHES certification; advance in the profession; and to network with other professionals (Thackeray, Neiger, & Roe, 2005). Thackeray et al. (2005) also found no dominant professional associations exist at the national level, even APHA, SOPHE, AAHE captured only 55% of the national market. In the United States, a national credentialing system, administered by NCHEC, was established in 1988 (Taub, Allegrante, Barry, & Sakagami, 2009). NCHEC establishes national standards for the practice of public health educators; administers a national certification examination; and regulates continuing education requirements that are designed to promote continued professional development for those member who are certified (Taub et al., 2009).

In the United States, a variety of accreditation processes are available to academic programs in colleges and universities to enhance the quality of professional preparation (Allegrante et al., 2001). One of the examples is the accreditation by an independent agency, such as CEPH (The Council on Education for Public Health) that is recognized by the US Department of Education to give accreditation to schools of public health and public health programs (University of Georgia, n.d). Although many are voluntary, this process provides

standards for the academic professional preparation of public health educators (Allegrante et al., 2001). However, studies also show that although educational preparation was adequate, preparation for public health educators in terms of some specific competencies was lacking (Finocchio et al., 2003; Galer-Unti & Tappe, 2006). In addition, a panel of experts has identified eight broad areas of competencies that are most needed among currently employed health educators: advocacy; business management and finance; communication; community health planning and development, coalition building, and leadership; computing and technology; cultural competency; evaluation; and strategic planning (Allegrante et al., 2001).

The need to increase some specific knowledge and skills is also acknowledge by public health educators. Studies show that public health educators considers the primary areas for training are organization development, evaluation, management, policy advocacy skills, and the importance of a lifespan approach to health issues (Demers & Mamary, 2008). Another study mentioned that administration, evaluation of programs and applying appropriate research principles are the primary areas needed in public health educators' training (Price, Akpanudo, Dake, & Telljohann, 2004). As for the instructors of Continuing Professional Education (CPE), study by Linnan et al. (2005) showed that instructors of CPE for public health educators were primarily full-time, experienced, and about one half were CHES certified. In regard to the methods of CPE, 85% of public health educators overwhelmingly preferred to attend a conference or workshop (Price et al., 2004); 67% preferred attending the American College Health Association *(*ACHA) annual meeting, and 67% wished to complete home self-study print materials (Davidson, 2008).

The idea of advanced credentialing was first introduced more than 20 years ago (Dennis & Lysoby, 2010). The percentage of questions in the exam is based on the results of the 2009

Health Education Job Analysis (HEJA), and they reflect the percentage of time spent in each of the competency areas by practicing health educators (Dennis & Lysoby, 2010). In 2010, a competency-based framework was constructed to describe background information for public health educators' professional development (Dennis & Lysoby, 2010).

Although 90% of the participants in the study were aware of health education degree programs, and 82% were aware of the CHES credential, public health educators still face obstacles in obtaining certification (Gambescia et al., 2009; McKenzie & Seabert, 2009). However, for those who hold certification as health education specialist, the reasons for initially obtaining the CHES credential and maintaining it over time are to improve the chances of getting a job; to show that they are competent to practice health education; and to assist with their advancement within the profession (McKenzie & Seabert, 2009). The majority of the participants in the study have the intention to participate in a national, coordinated, profession wide accreditation system in health education that are comprehensive, flexible, and build on the strength of an accreditation system and are linked to individual certification (Bernhardt et al., 2003). This intention might have been influenced by the high percentage of employers that prefer to hire professional public health educators. A study by Gambescia et al. (2009) revealed that eighty four percent of the employers felt that it was important to hire professional public health educators, although 56% of them acknowledge these public health educators do not have to be professionally certified.

Studies have also shown that these public health educators are hired under the title of health educators (75%), health program (project) administrator/manager (38%), health education specialist (28%), and others (22%) (Gambescia et al., 2009). These different names for job titles come with a variety of modification in their job descriptions. This modification on the job

description leads to the different emphases of the time spent by public health educators in conducting their area of responsibilities. According toJohnson et al. (2005), most public health educators (21.2%) spent their time on implementing programs, and 60% of the health educators in the study did not conduct research or participate in activities to advance their profession. This study shows that some of responsibilities are being neglected especially those that are related to the advancement of public health educators' professions. These job titles should be standardized to reflect the standard of job description within public health educators' areas of responsibilities.

2.2. Learning Opportunities for Public Health Professionals

Formal, informal and incidental learning are differentiated by how much control exercised by the learners (Marsick & Watkins, 1990). Formal learning is commonly sponsored by the institution, conducted in a classroom-based, and highly structured (Marsick & Watkins, 1990). As most Continuing Professional Education (CPE) activities are perceived as formal learning in public health field, this study uses the term CPE to represent all the formal learning opportunities for public health professionals. Similar to formal learning, informal learning may also occurs in the workplace but informal learning must takes place with the collaboration with others where individuals consciously learn in the workplace in a non-routine situation (Marsick & Watkins, 1990).

According to Marsick and Watkins (1990), professionals may learn informally from and through experience when they make sense of situations that they encounter in their daily lives. A subset of informal learning is called incidental learning (Marsick & Watkins, 1990). Marsick and Watkins (1990) described the difference between informal and incidental learning. According to Marsick and Watkins (1990, p. 7) "Informal learning: is predominantly experiential and non institutional . . . . [and] incidental learning: is unintentional, a byproduct of another activity." In

addition, Marsick and Watkins (1990) also further described that in informal learning: 1) the learners have more control of their learning; 2) does not have to be delivered in a classroom; and 3) the outcomes are less predictable than formal learning. As for incidental learning, the knowledge is "usually tacit, taken for granted and implicit in assumptions and actions." (Marsick & Watkins, 1990, p. 7)

In regard to formal learning, previous studies showed evidence of the advantages for professionals in participating in CPE. First, attending CPE on a regular basis fills the knowledge gaps that public health professionals experience due to their different backgrounds of knowledge. Public health professionals come from a variety of backgrounds and work in a variety of settings with the common goal of promoting population health (Gebbie et al., 2002). Public health professionals may come from medical, sociology, anthropology, nursing, and others. CPE activities aim in bridging gaps between their prior knowledge and the knowledge needed in their professional work in solving current public health problems. A study by Price et al. (2004) revealed that CPE can fill the gaps in formal preparation during undergraduate or graduate education, provide opportunities to update current skills, and provide new skills that are needed for their current jobs. However, these needs of knowledge and skills are varied and job-specific to the need of public health professionals. Therefore, it is necessary that the instructor should be able to facilitate the diverse need of CPE participants. A study by Ellery, Allegrante, Moon, Auld, and Gebbie (2002) revealed that CPE programs have been shown to be most effective when tailored to the specific need of the participants.

Second, CPE are offered by multiple providers and can be developed in many formats. This flexibility of CPE can be tailored to facilitate the improvement of education and knowledge for health professional. CPE can be designed by any educational providers, universities, and

professionals' associations to stay up-to-date with the latest research or issues in the public health field. This advantage is supported by Desikan (2009, p. 1) that defined CPE as "any educational activity, formal or informal, that professionals undertake to help them understand their profession and perform better at their work." The form of CPE activities may include but not limited to seminars, conferences, workshops, academic courses, satellite instruction, training programs, and directed self-study programs. CPE with adequate content, experienced instructors and effective methods of delivery support the professional development of the public health professionals to better human life and service in a profession (Desikan, 2009).

Third, CPE may offer credits that can be used to maintain professional certification of public health professionals. Many sessions in the American Public Health Association (APHA) conference offer Continuing Education Contact Hours (CECH) for the participants. For instance, CECH were offered in seminars or conferences as requirement for public health educators to maintain professional certification. Additional fees are required in order to attend these sessions. Each session offers 1 to 5 credits that can be submitted to National Commission for Health Education Credentialing (NCHEC) to maintain professional certification. These contact hour credits can be obtain through various CPE activities that are acknowledge by NCHEC. NCHEC certifies public health educators and develops standards to maintain this professional certification through competency-based examination and CPE activities (NCHEC, 2013a). NCHEC requires public health educators who hold Certified Health Education Specialist (CHES) and Master Certified Health Education Specialist (MCHES) to accumulate a minimum of 75 CECH over the five year certification period (NCHEC, 2013c).This means that CHES are encouraged to accumulate a minimum of 15 CECH per year and to complete all continuing education requirements at least 90 days prior to recertification (NCHEC, 2013c).

Although NCHEC does not specify the type of CPE that public health educators should attend, it is recommended that CHES and MCHES should choose the CPE activities that can enhance their knowledge in their areas of responsibility. These areas of responsibility are : 1). Area I: Assess Needs, Assets and Capacity for Health Education; 2). Area II: Plan Health Education; 3). Area III: Implement Health Education; 4). Area IV: Conduct Evaluation and Research Related to Health Education; 5). Area V: Administer and Manage Health Education; 6). Area VI: Serve as a Health Education Resource Person; and 7). Area VII: Communicate and Advocate for Health and Health Education (NCHEC, 2013c). All of these responsibilities need to be possessed by public health educators in order to provide the best quality of service in their professional work. Although CPE can come in many formats, a study by Davidson (2008) found that public health educators preferred to 1) attend seminars or conferences; 2) attend professional associations' annual meetings; and 3) complete home self-study print materials in order to continue their professional learning.

The fourth advantage of CPE is to build a network with other professionals with similar interests. This peer networking provides a sense of professionalism for public health professionals in terms of proficiency, performance, and ethical standards in their professional works which are the typical features of a profession, according to Kasworm, Rose, and Ross-Gordon (2010). These typical features of a profession need to be maintained and improved through CPE activities. This type of activity is supported by a study by Hirotsugu (2006) that revealed the top reasons for participation among health workers in Ghana were to maintain and improve professional knowledge and skills; to interact and exchange views with colleagues; and to obtain a higher job status.

The formats of CPE are mostly seminars or conferences that are organized by professional associations or educational providers. Despite all the benefits that CPE offers, there are several problems that will hinder the achievement of improving knowledge and skills of the participants. Some problems that will be discussed in this section are related to various resource constraints and needs of public health professionals that lead to low participation and low quality of learning in CPE activities. All of these concerns need to be addressed in order to maintain high participation in CPE programs and improve the job performance of public health educators.

The first problem with formal and mandated CPE activities is the time constraint of public health professionals. A study by Johnson et al. (2005) found that over 60% of public health professionals did not conduct research or participate in professional development activities due to various reasons. The heavy workload of the professionals in the study was shown to be the most significant cause of low participation in CPE activities (Johnson et al., 2005).

In addition to the time constraint of public health professionals, financial constraint is also another reason for the low participation in CPE activities (Demers & Mamary, 2008). Most CPE activities require participants to become a member of their organization before they register for the program. The cost of membership and registration may not be covered by their home institution. A study by Demers and Mamary (2008) revealed that financial constraint was the primary reason for public health professionals' lack of participation in CPE activities. Public health professionals stated that their employer gave them the opportunity to attend CPE activities; however, 38% of public health professionals stated that they were not reimbursed for the money they spent to attend CPE activities (Demers & Mamary, 2008).

Another problem beside resource constraint for participating in CPE relates to the intention of public health professionals to participate in CPE activities. As mentioned earlier, some of these "formal and mandated" CPE activities offered Continuing Education Contact Hours (CECH) that can be used to maintain professional certification of public health professionals. Therefore, public health professionals may only participate in CPE to acquire or maintain their credentials as professionals (Guskey, 2000). For instance, CHES and MCHES credentials need to submit at least 75 contact hours during a five year period of re-certification in addition to the heavy workload in their professional positions in order to maintain their professional credentials. Attending these seminars and conferences is the only way public health educators can acquire these 75 contact hours. CPE are mostly considered as a means to get points on contact hours to professional re-certification. As Marsick and Watkins (1990, p. 3) stated that professionals ready to learn when they are " at the point-of-scale, so to speak, yet training and development is often treated as a commodity for which employees are scheduled at the convenience of the organization." Consequently, there is no guarantee that learning is taking place during public health educators' limited participation in CPE activities.

The next problem with CPE relates to the different needs of public health professionals from CPE activities. Most CPE are targeted for a single profession, and this fact has become a challenge for public health professions. Public health practice is an activity rather than a specific discipline, and public health efforts are conducted by people from diverse backgrounds, ranging from health communications to those whose work in public policy (DiClemente, Salazar, & Crosby, 2013). Public health professionals are comprised of individuals from various backgrounds and at various levels of understanding of certain public health issues. Nurses, physicians, pharmacists, and other professions in public health have different needs related to

their jobs; therefore, it is almost impossible to fill these needs in one CPE activity. Previous researchers have shown that different skills are needed by public health professionals in CPE activities. Demers and Mamary (2008) found that organizational development, evaluation, management, policy, and advocacy are the areas that need to be included in a CPE. A study byPrice et al. (2004) found that administration, evaluation, and application of appropriate research principles are needed in CPE. Davidson (2008) found that public health professionals need additional training in designing data collection instruments, securing fiscal resources, interpreting evaluation and research results, carrying out evaluation and research plans, and developing plans for evaluation and research. All these needs were emerging because public health professionals observe the gaps between their current skills and skills that are needed to perform their jobs. It is a challenge to include all these needs in one single CPE. Davidson (2008, p. 9) concludes that "providers assume professionals need to acquire knowledge solely to problem-solve predictable issues at work." This assumption of public health professionals' needs influences the general type of knowledge given in CPE.

The next problem is the actual impact of CPE activities to improve public health professionals ' job performance. Although professionals can learn through various methods, limited time in CPE only allows the learning through instruction and may be unable to facilitate fully on each inquiry that public health professionals might have. CPE has limitations in terms of evaluating the impact of learning in the actual performance of their participants. CPE is considered to be an inert form of education and training for professionals (Beckett, 2001). Beckett (2001) also stated little evidence supports the transition of the learning process from the CPE's classroom to the workplace. Furthermore, powerful learning occurs when professionals learn-by-doing in their own workplace (Beckett, 2001). In addition, learning by doing in the

workplace is an effective strategy for professionals to continue learning in their profession. These workers must attend CPE offerings in their own workforce to ensure that they keep abreast of evolving organizational, ethical, and communication concerns within their community of practice (Gebbie et al., 2002).

These findings were supported by Cervero (2003, p. 16) that stated that we enter a third era of CPE in which education and learning occur in a place and a time when professionals "are most likely to have a need for better ways to think about what they do". For instance, Cervero (2003) suggested that educational activities should allow real-time interactions of health professionals with their clients in their geographical and professional boundaries. Public health professionals need to deal with a variety of cases within their own community geographically and professionally as defined by their community of practice.

Ideally, professional will optimize their learning if CPE can cover all three aspects of learning as Houle (1980) described in his study. Houle (1980) explained how professionals learn 1) through instruction in which the educators decide what professionals required to know; 2) through inquiry in which professionals express and learn new techniques or concepts using cooperation methods; and 3) through performance in which professionals learn through practice in the actual work settings. Public health professionals may benefit more by learning in the workplace by finding solutions for the problems at hand rather than participating in a limited time of CPE activities.

Evidence of the benefit and the challenges in attending CPE programs, and the evidence of effective learning in the workplace have led many researchers to explore all possibilities in continuous learning in the workplace to benefit public health professionals. These efforts should include the professionals in designing their own learning goals to optimize their professional

practice in the workplace. Public health professionals are adult learners, and their learning should progress in agreement with adult education perspectives which are learning from experience, learning informally, and learning from others (Desikan, 2009).

Public health professionals learn informally in the field through multiple activities by being a member of groups or teams that serve different purposes. According to Watkins and Marsick (1993, p. 69) informal continuous learning of professionals can occur because of the following: 1). Unanticipated experiences and encounters, the learning may or may not be consciously recognized or acknowledge by learner; 2). New job assignments and participation in teams; 3). Self-initiated and self-planned experiences through the use of media, mentor, conference, travel or consulting; 4). Total quality groups designed to promote continuous learning; 5). Planning a framework for learning through career plans, training, or performance evaluation; 6). Combination of less organized experiences; and 7). Just-in-time courses. Through these activities, public health professionals are continuously learning informally in the field.

Professional learning is central to informal learning because professionals have motivation to learn and possess the ability to develop strategy to pursue their learning needs (Watkins & Marsick, 1993). These informal learning can be found around real-life experience of public health professionals. One of the well-known informal learning groups that facilitate informal and incidental learning for public health professionals to complement their formal learning is known as communities of practice that first introduced by Wenger.

According to Wenger, McDermott, and Snyder (2002, p. 4) communities of practice are "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis." Through communities of practice, public health professionals learn by learning with others more than

from others. Communities of practice provide an opportunity for public health professionals to review their own professional practice. Communities of practice are "purposeful and strengthens a group's ability to learn from and apply wisdom to everyday life situations" (Stein & Imel, 2002, p. 94). Communities of practice can support the CPE activities that are conducted for public health professionals by maintaining and enhancing knowledge and skills before and after the CPE programs have ended-especially when CPE providers are still trying to facilitate all the different needs of various professional through many different purposes, forms, and locations of CPE delivery (Cervero, 1988). Communities of practice can help bridge these gaps of knowledge and skills that CPE are unable to provide for public health professionals through the three aspects of learning in communities of practice.

Houle (1980) explained in a study by Desikan (2009) that there are three aspects of learning that was experienced by professionals through communities of practice. In the study, Desikan (2009) found that 1) Communities of practice can help professionals to test new ideas and take risks individually or collectively in their domain; 2) Communities of practice can improve the process of distributed cognition and continuous learning through collective learning; 3) Communities of practice focus on professional's practice; and 4) Communities of practice help one to learn what and how to perform, to be competent in their professional work**.**

Communities of practice can also specifically target the professional practice of public health professionals in their workplace through dealing with specific problems that reside beyond CPE activities. Through communities of practice, public health professionals learn what and how to deal with public health issues in their own professional boundaries. This on-the-job learning is supported by Wenger (1998, p. 215) who stated that "learning involves an interaction between competence and experience…[requiring] a constant fine tuning between [the two]."

Communities of practice enable professionals to learn in their own workplace. Such learning helps public health professionals to test new ideas and distributed cognition and continuous learning after the CPE program has concluded. Desikan (2009, p. 17) stated that "education is demonstratively more effective when it seeks to improve the ways that professionals actually reason and make decision in their daily practice." This demonstration of effective education can be found in communities of practice through its ability to provide immediate access for professionals in making an informed decision on their job.

Public health professionals can to construct their own meaning from their background and past experiences to become engaged with other members in communities of practice. This construction of meaning is the application of constructivist approach. Constructivists believe that past experience and background influence the level of understanding as individuals construct new knowledge through the interaction with others (Ültanir, 2012). This meaning's construction transforms public health professionals' prior beliefs into new knowledge through reflecting on the current situation from engaging in communities of practice. The constructivist approach of communities of practice enables public health professionals to appropriately adjust their learning to their own unique community. Therefore, learning through communities of practice enables public health professionals to continue learning in their profession beyond the CPE.

In order to understand the learning processes within communities of practice, we need to understand the nature of knowledge itself. According to Wenger et al. (2002): (1) knowledge lives in the human act of knowing; (2) knowledge is tacit as well as explicit; (3) knowledge is social as well as individual; and (4) knowledge is dynamic.

In relation to knowledge lives in the human act of knowing, Wenger et al. (2002) explained how knowledge is a living process and not a static body of information. Professionals

need opportunities to interact with others who have similar challenges with their professions in order to acquire expert knowledge about the problems that they face. As cited by Wenger et al. (2002, p. 9) in their book, this knowledge of experts is "an accumulation of experience—a kind of "residue" of their actions, thinking, and conversations—that remains a dynamic part of their ongoing experience." Communities of practice make knowledge an integral part of their activities and interactions and also serve as a living repository for that knowledge (Wenger et al., 2002).

In regard to knowledge as being tacit as well as explicit, Wenger et al. (2002) explain how the tacit aspect of knowledge is often the most valuable for professionals especially from the business standpoint. People are aware that they know more they can explain, and this knowledge sometimes can be difficult to be present in documents or through tools. Because the difficulty in replicating tacit knowledge, professionals need to interact in an informal learning such as storytelling, conversation, coaching, and apprenticeship that communities of practice can provide (Wenger et al., 2002). Communities of practice is able to produce useful documentation, tools, and procedures that are needed by professionals and cover tacit and explicit aspects of knowledge (Wenger et al., 2002).

Wenger et al. (2002) also explain that while knowing is individual, knowledge is social as well as personal. A body of knowledge is developed through a series of disagreements including the controversies that can occur between professionals (Wenger et al., 2002). According to Wenger et al. (2002), members participate in the process of producing scientific knowledge through communities of practice. This collective nature of knowledge is especially important in a field when the changes occur too rapidly for an individual to master them (Wenger et al., 2002). Professionals need feedback from their peers to complement and develop their expertise to solve

today's complex problems (Wenger et al., 2002). Communities of practice welcome strong personalities and encourage debates and controversy as elements of what makes a community vital, effective, and productive (Wenger et al., 2002).

Knowledge is dynamic and continually in motion as every field is changing at an accelerated rate (Wenger et al., 2002). New data, inventions, and problems require professionals who can focus on creative problem solving on more advanced issues (Wenger et al., 2002). Because communities of practice provides baseline knowledge and common standards that can be understood well by all its members, communities of practice's members can focus their energy on the advancing new knowledge (Wenger et al., 2002). Communities of practice can facilitate interaction to help members in manage information overload, get knowledgeable feedback on new ideas, and maintain understanding of current thoughts, techniques, and tools (Wenger et al., 2002).

Communities of practice is ideal for administering knowledge by giving practitioners the freedom to acquire the knowledge they need and share this knowledge with other members of the community (Wenger et al., 2002). Although communities of practice can be part of an organization, communities of practice can also flourish independently depending on the level of participation of their members and the emergence of internal leadership within them (Wenger et al., 2002). These factors influence the many forms that communities of practice can have.

Wenger et al. (2002) describe in their book how communities of practice can take many forms. They categorized communities of practice in seven different formats. Communities of practice can be (1) small or big, (2) long-lived or short-lived, (3) collocated or distributed, (4) homogeneous or heterogeneous, (5) inside and across boundaries, (6) spontaneous or intentional, (7) and unrecognized to institutionalized (Wenger et al., 2002).

Small or big communities of practice are determined by the number of members who could influence the structure of communities of practice whether divided by geographic regions or by sub-topic to encourage active participation from members (Wenger et al., 2002). Communities of practice is also different in terms of its life spans as some communities of practice exist for centuries and others become inactive after a short period of time (Wenger et al., 2002). Communities of artisans, such as the communities of violin makers usually exist for many centuries due to the inherited knowledge from generation to generation within the communities of practice (Wenger et al., 2002).

The advancement in technologies contributes to the collocated or distributed forms of communities of practice. Wenger et al. (2002) describe that although many communities of practice started among workers at the same organization or live nearby, many communities of practice also exist across geographical and professional boundaries. Such distribution can influence the type of interaction between members. Some members may meet every day, but others may only interact through e-mail and telephone and only meet once or twice per year (Wenger et al., 2002). The existence of a shared practice (not the type of interaction) allows the member of communities of practice to share useful knowledge (Wenger et al., 2002). Wenger et al. (2002) explain with the advancement in technology and the need of globalization might make the distributed communities of practice as a standard rather than an exception.

Communities of practice are also can vary according to the background of their members. According to Wenger et al. (2002), homogeneous communities of practice consist of people with similar backgrounds or functions. This type of communities of practice can be advantageous in the forming phase of the communities of practice, but may have the disadvantage of having limited perspective in solving the complex problems (Wenger et al., 2002). A shared practice

with members from various backgrounds (e.g. a heterogeneous communities of practice) can contribute to the solution of these complex problems from multiple perspectives (Wenger et al., 2002).

The topic discussed by members can also influence the form of communities of practice. Wenger et al. (2002) explained that communities of practice can have members within the same business (inside boundaries) and members from across business units (across boundaries). Within business communities of practice are created as people prefer to address recurring problems in their job with their peers through communities of practice rather than memorize everything independently (Wenger et al., 2002). Across businesses, communities of practice are created by peers in various departments in the same company to solve problems and develop common guidelines, tools, standards, procedures, and documents (Wenger et al., 2002). communities of practice can also be created across organization boundaries where members interact to learn new knowledge outside their company affiliation and job description (Wenger et al., 2002).

The last two forms of communities of practice discussed by Wenger et al. (2002) are spontaneous or intentional communities of practice, and unrecognized to institutionalized communities of practice. communities of practice can be created because members need each other as learning partners without intervention from their organization or can be created intentionally as the means to administer a skill that is needed by an organization (Wenger et al., 2002). Therefore communities of practice are also unrecognized by the organization and only take form as informal lunch discussions or can be institutionalized as the official structure of the organization and when well managed can offer legitimacy and useful resources for members (Wenger et al., 2002).

Although communities of practice can take many forms, they all share three fundamental elements, (1) a domain of knowledge, (2) a community of people, and (3) a shared practice (Wenger et al., 2002).The three elements can make communities of practice an ideal knowledge structure when they function well together (Wenger et al., 2002). Wenger et al. (2002, p. 29) defined knowledge structure as "a social structure that can assume responsibility for developing and sharing knowledge". This model according to (Wenger et al., 2002) can provide a common language that facilitates discussion, collective action, efforts to gain legitimacy, sponsorship, and funding in an organization.

Domain of knowledge defines a set of matters in communities of practice as common ground that can create a sense of common identity (Wenger et al., 2002). Wenger et al. (2002) described that domain of knowledge validates the purpose and value of the members. The members are encouraged to contribute and participate in the discussion and to present their ideas (Wenger et al., 2002). Participating in communities of practice help members to guide their learning and gives meaning to their action, to decide which information is worth sharing, to pursue a certain activity, and to recognize the potential in tentative or half-baked ideas (Wenger et al., 2002).

Communities of practice can foster interaction and relationships based on mutual respect and trust so that members can share ideas, expose one's ignorance, ask difficult questions, and listen to the opinion of other members in communities of practice (Wenger et al., 2002). The shared practice aspect of a communities of practice is "a set of framework, ideas, tools, information, styles, language, stories, and documents that community members share" (Wenger et al., 2002, p. 29). Through the interaction in communities of practice, members develop

expertise of the basic knowledge that enables the community to proceed efficiently in dealing within its domain (Wenger et al., 2002).

According to Wenger et al. (2002, p. 51), seven principles cultivate communities of practice:

1. Design for evolution.
2. Open a dialogue between inside and outside perspective.
3. Invite different levels of participation.
4. Develop both public and private community spaces.
5. Focus on value.
6. Combine familiarity and excitement.
7. Create a rhythm for the community.

Wenger et al. (2002) also describe the five stages of developing communities of practice, they are: (1) Potential, (2) Coalescing, (3) Maturing, (4) Stewardship, and (5) Transformation. The potential and coalescing occur during early stages when communities of practice is in the planning and launching phase, the rest occur in the advanced stages when communities of practice is in the growing and sustaining phase (Wenger et al., 2002). In the potential stage, the members are still defining the scope of domain; finding people who are interested in the domain; and defining the common knowledge in communities of practice (Wenger et al., 2002). In the coalescing stage, members establish values of sharing knowledge; develop relationships with sufficient trust to discuss issues; and discover what and how to share the specific knowledge within the communities of practice (Wenger et al., 2002). In the maturing stage, members define the communities of practice's role within an organization and its relationship with other domains; manage the boundaries of the communities of practice, and seriously organize and administer

relevant knowledge (Wenger et al., 2002). The core members identify the gaps in the community's knowledge; identify its cutting edge; and feel a need to be more systematic in their definition of the community's core practices (Wenger et al., 2002). In the stewardship stage, members maintain the relevance of the domain and find a voice in the organization; maintain active and engagement in the intellectual focus of the communities of practice, and keep the communities of practice on the cutting edge (Wenger et al., 2002).

The transformation stage according to Wenger et al. (2002) occurs when communities of practice simply fades away and loses members and energy until no one appears at a community's events or communicates through electronic communities of practice. The transformation of communities of practice can also because communities of practice are turning into a social club where the members' focus slowly shifted from core issues to organizational ones, and then to their personal lives, or when communities of practice are split into distinct communities or merge with others because of overlapped topic (Wenger et al., 2002). Finally, communities of practice can become institutionalized as a center of excellence or become actual departments within an organization (Wenger et al., 2002).

Despite of the advantages offered in face-to-face communities of practice, active interaction could be a challenge for public health professionals' practices due to the time constraint and heavy workload of the public health field. In order to deal with this challenge, many communities of practice were delivered through the use of technologies that cover wide geographical areas. This type of communities of practice is called electronic communities of practice, or some prefer to call them as virtual communities of practice. Electronic communities of practice may enhance and be enhanced by existing patterns from offline relationships between

members; overcome the barrier of time and geographical challenges; and provide just-in-time access to solve work-related problems for professionals.

Over the past 40 years, electronic communities of practice have gone through rapid and unpredictable changes. In 1971 email became available using the @ sign and was followed by the use of UseNet as a network-wide discussion board in 1979 (Falk & Drayton, 2009). In 1985, whole earth electronic link (WELL) was created to stimulate formulation of virtual communities to improve teaching (Falk & Drayton, 2009). PLATO, the online computer-assisted instructional system was added to the various online communities in 1970s (Falk & Drayton, 2009).

Many designers as cited in Falk and Drayton (2009) have experimented with online communities for professional development and implemented concepts, such as electronic communities of practice based on past practices. Falk and Drayton (2009, p. 4) stated in their book that "theoretically informed electronic communities can support professional learning as well by enabling the identification and exploration of areas of professional knowledge, making them accessible to reflection and change". Electronic communities of practice are a critical part of one's work and learning that is mediated by electronic tools and resources. Falk and Drayton (2009, p. 11) stated that "The nature of an electronic community is a blend of vision and experience, of design and emergent." Through electronic communities of practice, professionals can acquire knowledge which they can later apply to their practices, through discussion and exchange of ideas (Ho et al., 2010).

Online formats can present an effective learning process to professionals. As cited by Harris Jr (2009), the U.S. Department of Education noted ample evidence that on-line education is often more effective than face-to-face education, quite possibly because online education participants tend to spend more time on task. Still, the same study also reported that on-line

education blended with face-to-face education still is considered more effective than doing these methods separately. However, learning through electronic communities of practice provides immediate access to information needed on the job, and can help to overcome the challenges of varieties in geography, time zone and work setting of public health professionals (Corvey, 2003; Falk & Drayton, 2009; Ho et al., 2010).

Another reason why electronic communities of practice should be considered as a tool to foster the learning process in the professional development of public health professionals is the connection between human brain and an electronic technology. Olson (2012) conducted a series of four laboratory experiments on the impact of search engines and ready access and retrieval of digitized information on human memory and cognition. Olson (2012, p. 2) concluded that "processes of human memory are adapting to the advent of new computing and communication technology." The participants in his study preferred to remember the location of the information rather than the information itself (Olson, 2012). Electronic communities of practice showed potential to enhance learning as it provides the convenience on seeking information through technology (e.g. computers) rather than memorizing it. This conclusion is supported by the previous study byHo et al. (2010) that electronic communities of practice offers immediate access to information that is needed by professionals and is provided by their peers or by repositories of current and historical discussions. Through electronic communities of practice, public health professionals select the information they need, which is important for their current professional needs. The rest of the information that relates to their general responsibilities can be stored in their electronic communities of practice and accessed for later use.

Previous studies have discussed specifically how online communities influence professional development especially for health professionals. A study by Corvey (2003) found

that nurses who participated in an online community had significant improvement in computer skills, communication skills, and practice-based information. These nurses learned skills through discussion on the listserv, networking with the other members of the online community, mentoring others who asked for advice, or just navigating the site. In regard to professional development, these nurses gained more pride in the profession, became more politically active, became more powerful and more critically reflective through their participation in the listserv (Corvey, 2003). Corvey (2003) concluded that electronic communities of practice can be a source for continuing professional education of health professionals by promoting both professional practice and professional identity development.

Currently, professionals have many options for finding engagement in the online community, either professionally or for personal use. Online networking sites, such as *facebook, myspace,* and *twitter* allow individuals to share ideas and information outside the boundaries of a profession. Current technology also allows online networking to be easily and readily accessible through mobile devices, such as tablets, mobile telephone, Personal Digital Assistants (PDAs), and other devices which may lack the convenience of a large screen, mouse, and keyboard. These trends show how much potential mobile devices hold for professionals to stay up-to-date with useful information around them, even while they pursue their daily activities. Although participation in electronic community of practice will be more difficult to measure with these current trends, the learning process could be more enhanced. Through electronic communities of practice, professionals could share their thoughts and questions, and they could get immediate responses from their peers through mobile devices. They could be aware of events and opportunities offered by professional agencies or other educational providers quickly through push emails or notification features. Even conferences or seminars, such as the ones which are

organized by the American Public Health Association (APHA), has an application that can be installed on a mobile device with just one click. This application will allow attendees to choose sessions to attend and act as their personal schedule manager for APHA.

The astonishing growth of assessing information through mobile devices has brought many benefits, but we still need to pay more attention to what information is being acquired, where it comes from, what the information is being used for, and how the information is affecting us as individuals and as a field. Although no guarantees exists that electronic communities of practice could maintain the quality of the information stored in their sites, the professional membership of electronic communities of practice reflects the quality of information provided by its members.

The factors that influence professional development through electronic communities of practice have been discussed in the literature (Falk & Drayton, 2009). The most discussed features of electronic communities of practice that can enhance learning are: the level of participation, accessibility of information provided, the features of electronic communities of practice, and the membership types (Falk & Drayton, 2009).

In regards to the level of participation in electronic communities of practice, it is important to remember that the retention in participating in online community depends on the motivation of individuals since there is no credit offered for participating (Falk & Drayton, 2009). Participants in online communities are both recipients and providers of professional development (Falk & Drayton, 2009). As providers of electronic communities of practice, the members have the same right and freedom in providing, leading, and facilitating the discussion on electronic communities of practice (Falk & Drayton, 2009). The way the online community members participate, inhabit, and learn, have implications on the internal and external processes

of change and growth (Falk & Drayton, 2009). Electronic communities of practice enables sharing knowledge, so members can learn from each other about information, techniques, and subject matters in their work or applicable to be applied to their work (Falk & Drayton, 2009).

Another factor is the accessibility of information that is provided on the electronic communities of practice's site. Falk and Drayton (2009) used the term "implementation metaphors" to describe how members of electronic communities of practice can access and put the information into a relevant context for their learning needs. For example, for face-to-face conference activities, members of an electronic communities of practice expect: interaction with peers with similar interests, poster presentations, and keynote speakers (Falk & Drayton, 2009).

The next factor is the design and feature of the sites. Professional development will be more rapidly enhanced if the site allows the members to choose their own preferences based on their own needs (Falk & Drayton, 2009). Falk and Drayton (2009, p. 19) stated that " the increase capabilities to combine features that optimize content retrieval, content creation, and collaboration, and to customize users' experience according to their preferences, history, and community affiliation, have created new possibilities that must be taken into account when creating learning communities for professional development". The statement warrants the importance of the structure of the site, tools, model of interaction and administrative structure of online community in order to have a significant effect on the professional development of the members of electronic communities of practice (Falk & Drayton, 2009).

For the type of membership factor, building trust and mutual knowledge develop more quickly in a restricted online community in which the membership is restricted (Falk & Drayton, 2009). For heterogeneous membership, the likelihood of brokering expertise, ideas, and tools among participants will increase, and this difference can encourage the learning process among

members (Falk & Drayton, 2009). The criteria of participation, either restricted or open, shape how the community will form and evolve (Falk & Drayton, 2009).

Several problems, however, exist in electronic communities of practice. According to Wenger et al. (2002), these issues include: distance, size, affiliation, and culture. Wenger et al. (2002) describe how distance can be a challenge in electronic communities of practice since members mostly interact with other members through web conference, telephone, or other means. There are connections and visibility issues between members in their interaction (Wenger et al., 2002). Another factor according to Wenger et al. (2002) is size in terms of knowing the other members of an electronic communities of practice personally. This challenge emerges especially in electronic communities of practice which have a large number of memberships (Wenger et al., 2002). The next issue is affiliation as the distribution of knowledge inside an electronic communities of practice should not have the adverse effect on an electronic communities of practice member's companies (Wenger et al., 2002). The difference in cultural backgrounds can be another challenge when members have difficulties to relate to one another when communicating through electronic communities of practice (Wenger et al., 2002). This difficulties to relate to others can lead to communication difficulties and to misinterpretation among members (Wenger et al., 2002).

Living with downsides is not easy, but electronic communities of practice also offer the advantages of supporting members' professional development. According to Falk and Drayton (2009, p. 20), the following decisions will shape the nature of the participants' experiences in their professional development:

- Will the users anticipating the professional experience to be more similar to visiting a specialized library or to attending a meeting with colleague?

- What role will a specific corpus of content play in participants' professional experiences?
- Will the site result in growing knowledge base, resource center, or library that users can read, share, and contribute to?
- Is the site intended to provide rich virtual meeting space where ideas are exchanged and collaborative work is done, but where no specific product is necessarily anticipated?

Therefore, Wenger et al. (2002) also provided ways in order to cultivate electronic communities of practice to minimize the challenges that members faced. According to Wenger et al. (2002), several steps need to be taken to define a distributed community. They are: 1. Achieve stakeholder alignment ; 2. Create a structure that promotes both local variations and global connections by combining diversity and connection, connecting people, and avoiding hierarchy; 3. Build a rhythm to maintain community visibility by arranging teleconferences organize face-to-face meetings, facilitate threaded discussions, link modes of interaction, and make judicious use of broadcast technology; and 4. Develop the private space of the community through personalized membership, small group projects and meetings, having organized or impromptu site visits, and remain opportunistic about chances to interact (Wenger et al., 2002).

The advancement in technology makes electronic communities of practice more of a standard rather than exceptions for professionals to learn from their peers in solving their daily problems at work. One of the examples of using mobile technology to retrieve information was conducted by Ranson, Boothby, Mazmanian, and Alvanzo (2007). This study was constructed to learn more about the use of personal digital assistance in practice and learning by describing the use of personal digital assistance in patient care and a personal digital assistance version of the Virginia Board of Medicine Continuing Competency and Assessment Form (CCAF) (Ranson et al., 2007). This study demonstrated that the use of personal digital assistance is associated with

the value of information for making clinical decisions, in educating patients, and teaching medical students (Ranson et al., 2007). From the study, the use of personal digital assistance has the potential to foster professional development for health professionals as long as the information is easily accessible and useful for on-the-job practices (Ranson et al., 2007).

Another study conducted by George (2011), investigated the evaluation of current technologies in health care, revealed that the participants gave uniformly positive evaluations of the mini course. Participants in this study also identified several current tools that were perceived as being potentially useful in their professional lives, including news aggregators, Google Alerts, and social networking sites, such as *Facebook* (George, 2011). This study suggested that social media technologies will be crucial in helping health professions to adapt to a new, networked era if used responsibly (George, 2011).

Ho et al. (2010) gave another example of the electronic communities of practice in helping to foster professional development in their article. The experiment compared Academic Detailing (AD) that was administered through Technology-Enabled Academic Detailing (TEAD) and face-to-face AD session. The purpose of this study was to determine the effects of both methods on the care of patients with diabetes in urban and rural communities. The study found that knowledge sharing occurred through TEAD sessions facilitated physicians to seek additional and personalized information for pharmacists beyond the limited time of the face-to-face AD session (Ho et al., 2010). Participants in TEAD were satisfied, and TEAD was effective in developing inter-professional electronic communities of practice (Ho et al., 2010). Through electronic communities of practice, health practitioners were able to maintain their own identities in practice as they helped each other and made decisions collectively about the adoption of

evidence to a certain degrees into clinical practice based on varying circumstances (Ho et al., 2010).

These trends show how much potential exists for professionals to stay up-to-date with the world around them even while doing their daily activities through their mobile devices. The online sites that were created for online communities through computers now can be delivered to the members of the community on-the-go. Although it is true that the participation will be more difficult to measure with these current trends, learning processes will be enhanced. Professionals can share their thoughts and questions, and they can receive immediate responses from their social network. They can be made aware of events and opportunities that are offered by professional agencies or other educational providers quickly through emails or notification features on their mobile devices. Even conferences or seminars, such as American Public Health Association (APHA), have an application that can be installed on mobile devices with just one click. This application allows attendees to choose sessions to attend and functions as their personal schedule for APHA.

However, many studies also stated that for the members of online community to realize the potential of professional growth through their participation, some crucial changes are needed (Ho et al., 2010). First, in taking advantage of conversation and exchange of information, a change of consciousness is needed (Ho et al., 2010). Second, in the process of building trust, self-presentation, exposure control or protection, constructive exchange development, and cultural exchange are required (Ho et al., 2010). Third, the community needs to use explicitly the power to distribute knowledge, share resources and use appropriate tools to the professional practice of its members (Ho et al., 2010).

Sargeant et al. (2004) suggested the following guidelines to enable a successful electronic communities of practice: 1) the members should be voluntary involved and self-organized in order to enhance their learning; 2) electronic communities of practice should facilitate the relationships and creativity among its members; 3) electronic communities of practice should focus on problems in order to generate solutions from multiple perspectives; 4) each members has the same right to become a leader, access to transparency, and public accountability , and freedom to experiment and succeed within the boundaries of electronic communities of practice. Sargeant et al. (2004) also recommend that members should always have access to electronic communities of practice, have shared identity as members of an electronic communities of practice that support collaborative problem solving, and maintain the growth and sustainability of electronic communities of practice.

Both face-to-face communities of practice and electronic communities of practice can be formed formally by organizations or professional associations or can be formed informally by individuals within an organization. These communities of practice were formed for many different reasons. Communities of practice were formed to train the members to become professionals (Cope, Cuthbertson, & Stoddart, 2000; Lindsay, 2000; Plack, 2003). Other communities of practice were formed to share the knowledge between professionals (Pereles et al., 2002; Richardson & Cooper, 2003; Russell, Greenhalgh, Boynton, & Rigby, 2004). Another reason to form communities of practice was to complete a certain task (Gabbay et al., 2003; Lathlean & May, 2002; Wild, Richmond, de Mero, & Smith, 2004).

Communities of practice are considered formal when they are intentionally created by professional organizations, educational providers, or organizations to facilitate their members in serving the communities of practice's purpose (i.e. become professionals, sharing knowledge, or

to finish a task). Some examples of these formal communities of practice are *phConnect* through The Centers for Disease Control and Prevention (CDC) website, *APHA-Connect* through membership with APHA, and *member communities* through SOPHE. Although some of these memberships of communities of practice are free, some of them require membership fees. This is another challenge for public health professional to interact with their peers through formal communities of practice. In addition to that, most of these formal communities of practice were mainly serves as announcement board for the members. Lack of interaction within these formal communities of practice is one of the main reasons to promote informal learning in workplace.

The members of communities of practice meet on a regular basis. During these interactions, professionals share information, insight, and advice in solving each other's problems at work. Tools, standards, designs, manuals, and other documents are the results of such discussion. As communities of practice' members interact to discuss common problems, they develop an understanding--implicit or explicit-- of the problem that may result in the personal satisfaction of having a sense of belonging to an interesting group of people (Wenger et al., 2002). These professionals may even develop a common sense of identity over time through which they construct a community of practice. All of these experiences as member of communities of practice support public health professional's development.

Wenger et al. (2002) acknowledge, however, that there are some downsides of communities of practice. Successful communities of practice should acknowledge and leverage this awareness in order to support the growth and ensure the vitality of communities of practice over the long term (Wenger et al., 2002). These downsides may come from individuals as members, the multiple communities, and the barrier from members' organizations (Wenger et al., 2002). The simplest downside is that the community may simply not be functioning well due to

the temptation of ownership / imperialism of domain, or the community creates cliques outside the focus of communities of practice, or when communities of practice loses its competence in supporting the professional development of the members (Wenger et al., 2002).

These downsides can be overcome by addressing each of the fundamental elements of the communities of practice. In the domain elements, these downsides can be overcome by: 1) establishing the legitimacy and strategic value of the domain; 2) clarifying the link to business matters and finding ways for the community to add value; 3) offering inspiring challenges; 4) including the community in important decisions; 5) holding the community accountable for the reputation of the firm in the domain; or 6) exposing the domain to other perspectives (Wenger et al., 2002).

In terms of the community elements, Wenger et al. (2002) proposed the following to overcome the downsides: 1) engaging the community in shared problem solving; 2) involving new generations in the community, and 3) connecting the community with other communities. In terms of practice elements, Wenger et al. (2002) recommended the following as treatments of the communities of practice downsides: 1) encouraging member's involvement in the development of the practice by making enough time to participate actively; 2) balancing joint activities with the production of artifacts; 3) initiating exciting knowledge-development projects; 4) benchmarking the practice of other communities that including competitors; 5) challenging members to help teams with leading-edge issues; and 6) valuing members' participation by allowing their contributions to build their reputation and affect their positions in the organization.

In regard to the type of interaction, study conducted by Ranmuthugala et al. (2011) found that 11 out of 32 studies revealed that health professionals commonly used face-to-face interaction in the workplace and only few of them use technology as medium. The study

suggested that geographical distribution of members and objective of communities of practice influenced the type of interaction between members (Ranmuthugala et al., 2011). These interactions in communities of practice that resulted in the informal learning of professionals are encouraged to create changes in job performance of public health professionals.

Although many learning opportunities are present for professionals to continue learning in the profession, the amount of learning depends on the individuals. Marsick and Watkins (1990) explained that framing and capacity act as delimiters of informal and incidental learning. Framing is how individuals relate the selected problem to its context as individuals explore for interpretations (Marsick & Watkins, 1990). Capacity is the ability to use the learning over a long period of time and over other learning outcomes (Marsick & Watkins, 1990). Marsick and Watkins (1990) also described how informal and incidental learning can be enhanced to foster professional development of professionals.

According to Marsick and Watkins (1990), creativity, proactivity, and critical reflectivity are the enhancers for informal and incidental learning. Marsick and Watkins (1990, pp. 28-31) explained the enhancers as the following: 1. Proactivity, refers to a readiness to take initiative; 2). Critical reflectivity, that requires people to check out their assumptions before blindly acting on them, pay attention to surprising results and inquire into their meaning, ask probing questions, and reframe their understanding of the problem ; 3). Creativity, which enables people to think beyond the point of view they normally hold, help learners break out of preconceived pattern, and allows people to "play" with ideas so that they can explore possibilities.

2.3. Learning Culture in the Organization

A culture is passed-on and shared between members of organization, and manifested mostly unconsciously in every aspect in organization life from the rituals of celebration to how

decisions are made (Gill, 2010). A culture in an organization is shown from the way individual communicate to each other, type of leadership, the performance evaluation that has been conducted, the physical environment of workplace, and the knowledge management in an organization (Gill, 2010). According to Schein 1985 (as cited in Gill, 2010, p. 5), organizational culture is "the values, basic assumptions, beliefs, expected behaviors, and norms, of an organization; the aspect of an organization that affect how people think, feel, and act". This organization culture have impact on creating and sustaining learning in organization overtime (Gill, 2010).

A learning culture is a learning that is manifested in every aspect of organizational life (Gill, 2010). A learning culture occurs in an organization that continually makes reflection, feedback, and sharing of knowledge as part of its function in a daily basis (Gill, 2010, pp. 5,49). According to Gill (2010, p. 5), a culture of learning is "an environment that supports and encourages the collective discovery, sharing and application of knowledge . . . . [in which individuals are] continuously developing new knowledge together and applying collective knowledge to problems and needs". The culture of learning contributes to the improvement of capacity of an organization. An organization that with a learning culture encourage surfacing, noticing, gathering, sharing, and applying new knowledge (Gill, 2010, p. 29). According to Gill (2010), a learning culture in an organization can be developed through continuous individual, team, organizational, and community feedback and reflection.

According to Gill (2010, p. 49), learning should be manifested in every aspect of organizational life where members are continuously learning as individuals, in teams or groups, as a whole organization, in relation to their communities.Watkins and Marsick (1993) stated that learning is often shared informally between individuals that may belong to many different group

or teams. These Individuals learn in the workplace as they work together to achieve certain goals through interaction with their peers as they help each other to solve their work-related problem (Watkins & Marsick, 1993). According to Watkins and Marsick (1993) these collaboration may transform the knowledge of these professionals involved and lead to learning process at the organizational level that more difficult to manage or predict. However, learning process at organizational level is necessary to facilitate changes in the job performances of these professionals. Thus, although learning at individual level is necessary, it won't be sufficient to influence changes in performance without the ongoing support from systems, practices, and structures in the workplace (Marsick & Watkins, 2003).

Marsick and Watkins (2003) considered workplace learning as "the little R&D" (p.133) because most of the learning in organizations are evolving from the work itself where members learn spontaneously and organically. According to Marsick and Watkins (2003) workplace provides ongoing experimentation where professionals use their everyday experience as learning outcomes that resulted in changes of knowledge performance. In learning organization, Individuals learns and share their learning experiences with their peers which serves as vehicle for learning in groups and the whole organization (Watkins & Marsick, 1993).

Learning and working is a different concept but always intertwined because learning is part of work, and work involves learning (Dixon, 1999). Although learning commonly viewed as an individual activity, learning in workplace takes place within a social context to promote collaboration between individuals or teams in an organization (Smith & Sadler-Smith, 2006). The learning that takes place among public health professionals should follow Knowle's theory of andragogy that has the following assumptions: 1. Adults need to know why they need to learn something before undertaking it; 2. The adult’s self-concept is one of being responsible for their

own decision; 3. Adults come to a learning experience with greater volume and variety of life experience than do younger learners; 4. Adults become ready to learn those things that they need to now to cope with their real- life situations; 5. Adult's orientation to learning is life-centered with the potential of some form of payoff in work or personal life; and 6. The most potent motivators for the adult learner are internal pressures such as job satisfaction, self-esteem and quality of life (Smith & Sadler-Smith, 2006, p. 89).

In regards to the learning in a workplace, Watkins and Marsick (1993) explained that organization has the role to empower people, integrate quality and quality of work life, create free space for learning; where teams collaborate and share the gains; and individuals promote inquiry, create continuous learning opportunities in organization. The knowledge resulted from these learning process at all levels serves as nutrient that enables the organization to grow as a learning organization (Marquardt, 1996). Smith and Sadler-Smith (2006) explained that there are three forms of workplace learning that conceptualized by Mezzirow (1991) as the following: 1. Instrumental learning, that focuses on learning aimed at skill development and improving productivity; 2. Dialogic learning, that involves learning about the individual's organization and their place in it; and 3. Self-reflective learning that involves a transformation of the way a person looks at self and relationships (Smith & Sadler-Smith, 2006, p. 36). According to Smith and Sadler-Smith (2006, p. 36), these three domain of learning are integrated when "the learners achieves a critically reflective state in which he or she is sensitive to why things are being done in a particular way, and is critically reflective before accepting 'given' solutions to problems or methods of practice".

In an organization, there are three levels of learning, individual learning, group/team learning, and organizational learning. According to Marquardt (1996, pp. 21-22), individual

learning refers to the change of skills, insights, knowledge, attitudes, and values acquired by a person through self-study, technology-based instruction, insights, and observation; Group or team learning refers to the increase in knowledge, skills, and competency which is accomplished by and within groups; and organizational learning represents the enhanced intellectual and productive capability gained through corporate wide commitment and opportunity for continuous improvement. Individual learning is needed for organizational learning since individuals form the units of group and organizations (Marquardt, 1996, p. 32). However, organizational learning differs from the other levels of learning because : 1. Organizational learning occurs through the shared insights, knowledge and mental models of members of the organization; and 2. Organizational learning builds on past knowledge and experience—that is , on organizational memory which depends on institutional mechanisms (e.g. policies, strategies, and explicit models) used to retain knowledge (Marquardt, 1996, p. 22). This continuous learning in organization strategically used to foster the development of organization through the changes in knowledge, beliefs and behaviors of members.

The organization that continually transform itself through the learning of its member are called a learning organization.Watkins and Marsick (1993, p. 8) defined learning organization as “one that learn s continuously and transform itself.” This definition is supported by Marquardt (1996, p. 2) that defined learning organizations as "companies that are continually transforming themselves to better manage knowledge, utilize technology, empower people, and expand learning to better adapt and succeed in the changing environment." In addition, Marquardt (1996) also describe that a learning organization provide structure for individuals to apply their knowledge while continue to empowers people within and outside the organization for the success of the organization.

Learning organizations are sometimes used intertwined with organizational learning. Both are similar but also different in the usage of term. Denton (1998) describe the difference between these two terms. According to Denton (1998, p. 3) learning organization is "an organization that practices organizational learning" and organizational learning is "the distinctive organizational behavior that is practiced in a learning organization." According to Dixon (1999), organizational learning results from intentional and planned efforts to learn and it may occur accidentally. However, organization cannot afford to rely on learning through chance (Dixon, 1999). Organizational learning takes place through learning and interaction between individuals in the organization. The individuals processes and outcomes in the organization are prerequisites for organizational learning and form an important basis for it (Probst, 1997, p. 17). Therefore, organizational learning is always unique to an institution with its own capabilities and characteristics (Probst, 1997).

Although learning organization and organizational learning are synonyms, but a learning organization is an entity, and the organizational learning is a process, a set of actions (Denton, 1998). Therefore a learning organization is something that the organization is, and organizational learning is something that the organization does (Denton, 1998). This differentiation aligns with Marquardt (1996) description that learning organization focusing on what, and organizational learning refers to how organizational leaning occurs in the organization. This means that organizational learning is one of the dimensions or elements of a learning organization (Marquardt, 1996).

According to Marquardt (1996, p. 138) in a learning organization, the transfer of knowledge is indispensable where "knowledge should be disseminated and diffused appropriately and quickly throughout the organization." This transfer of knowledge can occur

intentionally and unintentionally. In a learning organization the intentional transfer of knowledge occurs through the following: Individually written communication (memos, reports, letters, open access bulletin boards), training, internal conferences, briefings, internal publication, tours, job rotation/transfer, and mentoring (Marquardt, 1996, p. 138). The unintentional learning transfers however occur in unplanned interaction among individuals in a learning organization. Marquardt (1996, p. 139) list the following situations in which the unintentional learning take place among the individuals in a learning organization: Job rotation, stories and myths, task forces, and informal networks.

In order to become a learning organization, Marquardt (1996, pp. 211-215) stated that organization need to encourage, expect and enhance learning at all level and listed the following as a key to successful transformation into a learning organization: 1. Establish a strong sense of urgency about becoming a learning organization; 2. Form a powerful coalition pushing for learning organization; 3. Create the vision of learning organization; 4. Communicate and practice the Vision; 5. Remove obstacles that prevent others from acting on the new vision of learning organization; 6. Create short-term wins; 7. Consolidate progress achieved and push for continued movement; and 8. Anchor changes in the corporation's culture.

However, the organization also faced some challenges when the people inside the organization experience what Probst (1997) called as unlearning. Unlearning is defined by Probst (1997, p. 64) as "the process by which knowledge is erased from the memory." This unlearning process may occur when the organization experience defensive pattern, norms and privileges, organizational taboos, and information disorders (Probst, 1997, p. 64). In order to overcome the challenges of learning and sustaining the learning organization, Marquardt (1996, pp. 215-219) listed the following as the solution: scanning imperative, performance gap, concern for

measurement, experimental mindset, climate of openness, continuous education, operational variety, multiple advocates or champions, involved leadership, and systems perspective. The organization that able to transform into and sustain itself as a learning organization, the organization will be able to produce the following outcomes: 1. Develop new products and services; 2. Increase productivity; 3. Have higher morale; 4. Improve organizational work climate; 5. Experience less turnover; 6. Experience less waste/sabotage/error; 7. Experience improved financial performance; 8. Experience increase efficiency and less redundancy (workers understand how each job contributes to the organization's success); and 9. Provide more effective service to clients/customers, and are able to change more quickly (preskill & Torress, 1999, p. 110).

Organizational learning also has impact of individuals and teams learning. In a learning organization, individuals and teams will be able to: 1. Understand how their actions affect other areas of the organization; 2. Tend to ask more questions that give solutions/answers; 3. Develop greater sense of personal accountability and responsibility for the organizational outcomes; 4. Be more as self-directed learners; 5. Take higher risks; 6. Be more consultative, more coaching; 7. Be more likely to ask for help; 8. Be active listeners; 9. Use information to act; 10. Develop creative solutions (willingness to do something different); and 11. Share the works that need to be done. (preskill & Torress, 1999, pp. 109-110). A learning organization provides a learning culture to individual, groups/teams, and organizational level. According to Klimecki and Probst (1990), culture is "a system of knowledge and insights which serve as a basis for interpreting experiences and generating actions." (Probst, 1997, p. 129). Probst (1997) continue to explain that culture is 'implicit phenomenon', and is expressed in shared values, norms, and attitudes among the members of the organization.

There are, however, barriers to learning culture that can be manifested in subtle and not-so-subtle resistance (Gill, 2010). Gill (2010, pp. 15-23) listed the following as the barrier to learning culture in an organization: 1) Program focus because the attention of member is usually on program delivery and not on the organization improvement; 2) Limited resources that make members unaware of many opportunities of learning that do not require large expenditures of time and money; 3) Work-learning dichotomy when there is an assumption that work and learning are different activities and learning needs to be conducted in a classroom; 4) Passive leadership where staff only will report success because that's what they think the leader want to hear and don't ask tough questions about the organization; 5) Non-learning culture that closes off communication as well as stifles honest feedback and reflection, and discourages risk taking that can provide the opportunity for learning; 6) Resistance to change as the tendency to maintain the familiar and not take the risk of trying something new and different; 7) Not discussing the un-discussable that prevents information from surfacing in organization that could be very useful for learning and change; 8) Need for control that prevent member from communicating vital information to another staff member who is not within a particular line of authority; 9) Focus on short-term simple solution as by taking the easy way out and not investing time, effort, resources, and emotion in the big picture and long view; 10) Skilled incompetence where individuals have the natural tendency to avoid embarrassing or threatening interactions with others, or not accepting responsibility for problem situations; and 11) Blame (not gain language) that puts the other person on the defensive and stifles any interest that person might have had in receiving constructive feedback, reflecting on its meaning, and using what he or she has learned to improve the organization.

Gill (2010, p. 47) also described that there are activities that can create and maintain a culture that conducive to learning in an organization: 1. Make highly visible, dramatic changes that are symbolic, as well as substantive, of a learning culture in the organization; 2. Ensure that values demonstrated in everyday actions are consistent with espoused values of learning and talk about this alignment of values with your employees; 3. Assess and compare the perceived current culture with the desired learning culture; 4. Develop a shared plan with board members and staff for what the organization must do to move from the current culture to the desired learning culture; 5. Allow employees to dedicate time to formal and informal learning that will enhance their capacity to do their work effectively; 6. Develop learning events that are explicitly linked to the strategic goals of the organization; 7. Create ceremonies that give recognition to individual and team learning; 8. Make the artifacts of learning visible to employees, such as a library, spaces for formal and informal conversations among employees, benefits that support education, and computer access to just-in-time information; and 9. Praise individuals and groups that use learning as one of their indicator of success.

In order to measures important shifts in that influence an individual learning, Marsick and Watkins developed an instrument called the Dimensions of the Learning Organization Questionnaire (DLOQ) in 1990. DLOQ was developed based on the model of dimension of a learning organization by Watkins and Marsick (1993) and was built on the idea that changes must occur at every level of learning in the organization (Marsick & Watkins, 2003). These changes then become new practice or routine that can be used by the member of organization to improve their job performance (Marsick & Watkins, 2003).

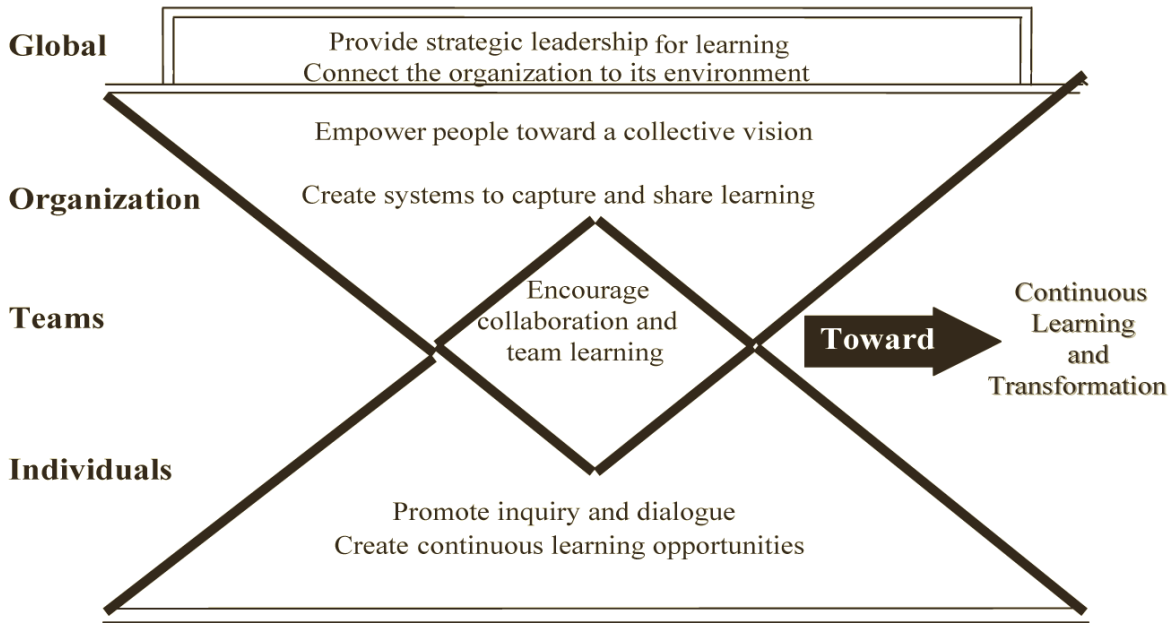

Figure 2.3.1. Watkins and Marsick (1993) Model of Dimensions of a Learning Organization

DLOQ used a six-point scale to distribute responses from “almost never” to “almost always” (Watkins & O’Neil, 2013). A six point scale was used to avoid a clustering of responses at the mean, thus respondents were asked to make a choice either of the continuum based on how true the statement for their organization according to their perception (Watkins & O’Neil, 2013). According to Watkins and O’Neil (2013, p. 137), items in DLOQ were "vetted with expert and student panels to ensure the language was simple, straightforward, and at an appropriate reading level for a largely professional audience." These items were developed based on seven dimensions of the learning organization, they are: *Create continuous learning opportunities* (CL), *promote inquiry and dialogue* (DI), *encourage collaboration and team learning* (TL), *establish systems to capture and share learning* (ES), *empower people toward a collective vision* (EP), *connect the organization to its environment* (SC), and *provide strategic leadership for learning* (PL) (Marsick, 2013, p. 130).

DLOQ has been used in many fields to measures organizational capacity to learn and change to increase its overall performance. DLOQ also has been used in public health field for the same reason to meet current public health's demands. A study by Watkins, Milton, and Kurz (2009) used DLOQ that has been specifically modified to public health field. The DLOQ for public health field has 65 items which take 10 -15 minutes complete. It consists of the following: 1). Part I (Dimensions of the Learning Organization) in which the participants were asked to think about how their organization supports and uses learning at an individual, team, and organizational level; 2). Part II (Change in Organizational Performance) in which the participants were asked to rate the changes in their organization that occurred in the past year; 3) Part III (Organization Profile) in which the participants were asked to provide the information about their job role in the organization and the length of time in the current position. DLOQ that was specifically designed for public health field was used in the study by Watkins et al. (2009) to identify the organizations' capacity to learn and to change to meet current public health demands. This study distributed the DLOQ for public health field via a commercial survey website to four local public health departments. The findings suggested the DLOQ was also a valid instrument for public sector organizations, and that the learning organization was correlated with performance than were individual and team learning dimensions (Watkins et al., 2009).

As any instrument, DLOQ has its own limitations. According to Marsick and Watkins (2003, p. 138), the following are the limitation of DLOQ: 1) DLOQ is a self reported data and a perceptual measure; 2) DLOQ performance questions often only answered by middle- and higher-level managers; 3) DLOQ is at best proxy measures for actual performance, and can't show high and low over time. However, recent meta-analysis showed that the DLOQ has continued to achieve high reliability for all seven dimensions and show future potential from its

increasing use across all of the cited contexts and variations (Song, Chermack, & Kim, 2013; Watkins & Dirani, 2013)**.** Since 2002, there has been 173 requests to use the DLOQ in study in 38 countries, primarily in the United States (63 requests), Europe (35 requests), Africa and the Middle East (27 requests), and Asia (24 requests) (Marsick, 2013, p. 130). Studies also show that all DLOQ dimension are able to measure the learning culture in different cultures (Dirani, 2013; Kim & Marsick, 2013). Today, over 70 articles using the DLOQ in many contexts and cultures have been published and has been translated from English into at least 14 languages other than English (Watkins & O'Neil, 2013). These cumulative works provide evidences that DLOQ demonstrated the validity and reliability in many different contexts and cultures.

CHAPTER 3

METHODOLOGY

Continuing Professional Education (CPE) is entering the third era in which education and learning occur in a workplace (Cervero, 2003). Many researchers provide evidence that most CPE has been perceived as those formal educational programs for public health professionals and mandated for those who wished to maintain professional certifications (Cantor, 2006; Desikan, 2009). The concept of learning in the profession is believed to lead to the improvement of job performance of public health professionals (Corvey, 2003; George, 2011; Ho et al., 2010; Ranson et al., 2007). However, little research has been done to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals.

The purpose of this study is to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals. This chapter will describe the methodology used to achieve the purpose of the study. In this chapter, the following will be presented: 1) Study Design; 2) Instrument/Measures; 3) Selection of Participants; 4) Data Collection; and 5) Data Analysis.

3.1. Study Design

This study used a cross-sectional and exploratory study design to survey members of the Georgia Public Health Training Center (GPHTC) at the University of Georgia (UGA). All data were collected from December 2013 to February 2014 for an approximately 10-week period of study. Since few studies about the role of the learning culture and participation in professional

development of public health professionals were conducted in the past, the data collected for this study were collected for descriptive and exploratory purposes. The relationship between the learning culture and professional development of public health workers was investigated through *Qualtrics* survey site as the medium for data collection. The professional database that was chosen for this study was the database of the Georgia Public Health Training Center (GPHTC). The mission of GPHTC is "to assess the needs and build the capacity of the current and future generation of public health workers in governmental public health, health care organizations, and non-profit organizations for the purpose of advancing and improving the health of Georgia citizens" (GPHTC, 2013). The GPHTC database was chosen to increase the representativeness of the study because GPHTC members are those public health professionals in the state of Georgia that shared a common characteristic in terms of competencies and job description.

The professional database was used as medium for this study because previous research has provide evidence that the database can be a powerful research tool to investigate professional development of professionals (Corvey, 2003; Medley, 2001). Berg (2008) included the following justification to use the online survey in his study: 1) Participants most likely have access to computer and internet; 2) Participants can access the survey anytime; 3) Participants may be more open and honest in answering the questions online; and 4) participants can be offered increased confidentiality because there is no face-to-face interaction meeting. The same justification of using online survey also used for this study to learn about the learning culture and professional development activities of public health professionals..

3.2. Instrument/Measures

The online survey was developed by the researchers based on Watkins's formal, informal, and incidental learning Questionnaires and the short version of the Dimensions of the

Learning Organization Questionnaire (DLOQ). DLOQ grew out from research and practice, and it has been tested and modified through many research studies since 1990 (Marsick & Watkins, 2003). DLOQ has been validated by submitting DLOQ to rigorous critique for meaning, and used reliability coefficients to identify poorly worded items and low performing items (Marsick & Watkins, 2003). Through this process of validation, items were deleted or revised until coefficient alphas for each scale were acceptable which is above the recommended .70 (Marsick & Watkins, 2003).

3.3. Selection of Participants

The study was conducted with participants living and working across the state of Georgia that were recruited from the database of the Georgia Public Health Training Center (GPHTC) at the University of Georgia (UGA). This database gave the researcher access to approximately 900 participants. All data was collected using online survey from December 2013 to February 2014. The state of Georgia was chosen because in the 2009 reports by the Public Health News Bureau, Georgia is ranked 43rd in for overall health performance, dropping from 41st in 2008 (Hataway, 2013). Hataway (2013) also reported that among the states, Georgia gets these poor health rankings according to the "2008 Health Rankings: Georgia and Georgia's Children":

- 31st for the percentage of adults who do smoke
- 37th for the percentage of adults who do not exercise regularly
- 38th for the percentage of overweight high school students
- 39th for the percentage of adults who are obese
- 41st for the percentage of adults with diabetes
- 40th for infant mortality
- 41st for teen birth rate

• 43rd for pre-term birth.

• 45th for low birth weight babies

• 47th for the prevalence of infectious diseases like tuberculosis, hepatitis and AIDS.

The state of Georgia also has the second highest rate of obesity 10-to-17-year olds in the nation according to the 2010 “F as in Fat” report released this summer (Hataway, 2013). The numbers suggested that the state of Georgia performs poorly in terms of disease prevention and treatment. This warrants the improvement of health promotion programs conducted by public health professionals in the state of Georgia. Understanding how public health professionals learn through formal, informal, and incidental learning in their professional world can facilitate the improvement of their job performance.

The participants in this study were asked to answer 73 questions in the online survey that took about 10-15 minutes to complete. Once the participants received the study invitation in the recruitment email and read it, they could ignore or self-select as participant in this study by clicking the URL that takes them to the online survey. If the URL did not work, participants could copy and paste the link to their browser. By clicking the URL link, the participants were confirming consent to participate in the study that was included in the recruitment email. Participants could then begin to fill the online survey. The participants were instructed to answer the questions as fully and honestly as possible and were not asked to complete the survey again if they have done it before. Once the participant had answered all the online survey questions, the survey thanked the participant.

3.4. Data Collection

The study adopted a multi-stage process for data collection and adhered to the majority of the online survey design quality criteria by Andrews, Nonnecke, and Preece (2003). The

researcher pilot tested the survey website on function, readability, and graphics. This pilot test established the length and ease of completion of the survey. The online survey took about 10-15 minutes to complete. After the pilot test of the online survey, the researcher sent the members of the GPHTC a recruitment email to participate in the study. We sent three separate recruitment emails asking for participation in the study. They were delivered at the beginning of December 2013, at the beginning of January 2014, and at the beginning of February 2014. The researcher explained about the purpose of the study and the approximate time to complete the online survey. All the data gathered from the online survey were saved in password-protected files on researcher's personal computer. No paper printed copies of the data were made.

A study by Berg (2008) described how the majority of internet-based research has been conducted without offering money incentives to the participants. The lack of money incentives in previous studies was not believed to be a barrier in participation (Berg, 2008). Therefore, instead of providing money incentives, this study offered the participants a sense of professional accomplishment by sharing their learning experiences in their organization that relates to their professional development. The information provided by participants in this study will contribute to the existing knowledge of the learning culture and the professional development of public health professionals.

3.5. Data Analysis

All of the data in this study were gathered using *Qualtrics* and analyzed using statistical software. The online survey questions were used mainly for descriptive and not for inferential purposes. Thus, researcher obtained the frequency count and percentages to describe the relationship between variable in this study. The learning culture, the learning opportunities and the relationship between the two were analyzed to determine the level of learning culture, the

existing learning opportunities, the participants' participation in learning and the relationship between learning culture and the participation in professional development activities. The means of available and participated formal, informal, and incidental learning in the workplace were analyzed using statistical software and presented as correlation table that compared them with the seven dimensions of learning culture.

CHAPTER 4

RESULTS

This research study primary aims are investigating learning opportunities that foster professional expertise in the public health field. Previous research showed how continuous learning fosters professional development of professionals in many fields, not only public health (Corvey, 2003; Desikan, 2009; Falk & Drayton, 2009; Gabbay et al., 2003; Ho et al., 2010; Lathlean & May, 2002; Lindsay, 2000; Richardson & Cooper, 2003; Wild et al., 2004). However, many of these professionals did not attend the activities that may enhance their professional development (Johnson et al., 2005). Various resource constraints and other barriers were identified in the previous studies that may influence the advancement of professional development for public health professionals (Bower et al., 2007; Demers & Mamary, 2008; Schweitzer & Krassa, 2010).

The purpose of this study is to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals by asking the following research questions:

1. To what extent do the public health professionals participate in formal, informal and incidental learning for professional development?
2. How do public health professionals describe the learning culture at their organization at individual, team, and organizational levels?
3. To what extent does perception of a high learning culture relate to high levels participation in formal, informal and incidental learning among public health professionals?

In order to answer the research questions, an online survey was distributed to the email addresses listed in the database of the Georgia Public Health Training Center (GPHTC) under the University of Georgia (UGA). The online survey asked questions about personal information, learning opportunities, the learning culture of the organization, and the professional development activities of the participants. Therefore, in order to describe the answers of the questions in the online survey, this chapter will be divided into the following sections: 1) Data Gathering and Preparation; 2) Description of the sample; 3) Participation in formal, informal and incidental learning; 4) The learning culture at individual, team, and organizational levels; 5) Professional development activities; and 6) The relationship between the learning culture and participation in professional development activities.

4.1. Data Gathering and Preparation

The final sample used for analysis consisted of 172 public health professionals in the database of The Georgia of Public Health Training Center (GPHTC). This section describes the demographic characteristics of these professionals and their participation in learning opportunities to improve their professional expertise. Participants were recruited from the GPHTC database at the beginning of December 2013, January 2014, and February 2014.

The first recruitment email was sent on December 2013 to 612 out of 900 email addresses from the GPHTC database. We selected the participants based on their identifying information of their email address that listed on the database. We excluded those email addresses that indicating the nonpublic health professionals. Out of 612 participants that were prescreened, 117 participated in the online survey. On January 2014, we sent out the second recruitment email to 536 email addresses after excluding those who were excluded because they were not public health professionals, they refused to participated in the study, they used invalid email addresses,

and they already participated in December 2013. Out of 536 email addresses, 22 additional participants completed the online survey study. The last email recruitment was sent out on February 2014 to the final 519 email address. The same method of exclusion was used to eliminate a number of email addresses. Out of 519 email addresses, 33 additional public health professionals participated in the survey that gave us the total of 172 participants for this study. The survey was closed at the second week of February 2014 which gave us 10 weeks of recruitment data. The next section describes the sample in this study in terms of their demographic characteristic and their participation in the learning opportunities.

4.2. Description of the Sample

The first section of the online survey asked participant's age, gender, institution, job title, public health background, highest educational degree, field of study of their highest degree, marital status, race and ethnicity, professional credential/certification, the organizational body that granted them the professional certification, and their participation in continuing education activities. The next section describes each of these variables related to demographic characteristic and professional certification.

The age of the participants vary between 24 to 74 years old, with both the mean and the median being 47 years old. Most of public health professional who participated in this study identified themselves as female (69.4%), married (70.3%), non Hispanic (98.1%), White or Caucasian (83%), working in a non-profit institution (90.6%), and have a public health background (77.5%). However, 153 job titles were identified by the participants in this study that can be categorized as the following: 1) Director; 2) Academia; 3) Executive/CEO/President/vice president; 4) Program Coordinator/Manager/Supervisor; 5) Administrator; 6) Nursing profession;

7) Health Profession/Specialist; and 8) Others. Table 4.2.1. describes the total number of job titles after we categorize them into 8 different categories.

Table 4.2.1. Job Titles of Public Health Professionals

Job Title	Frequency
Director	46
Program Coordinator/Manager/Supervisor	33
Academia	18
Health Profession/Specialist	18
Executive/CEO/President/vice president	17
Nursing profession	6
Administrator	2
Others and not identified	32
Total	172

Table 4.2.2. Field of Study of Public Health Professionals

Degrees	Frequency
Public Health/Health science	64
Business/finance/accounting	21
Nursing	17
Education	7
Medicine	4
Others	41
Not identified	18
Total	172

In terms of degree and the field of study of the highest degree, the participants in this study mostly hold a master's degree (52.5%), followed by those who hold bachelor's degree (22.5%), and doctoral degree or equivalent to doctoral degree (15%). Public health or health science is the common field of study of participants. When not reporting a degree in public health or health science, these public health professionals had a wide range of variety of fields of study that can be categorized into the following: 1) Business/finance/accounting; 2) Education; 3) Nursing; 4) Medicine; 5) Other. Table 4.2.2 listed the participant's degree in categories.

Table 4.2.3. Professional Credentials of Public Health Professionals

Professional Credentials or Certifications	Frequency
Nursing/Midwife Credentials or Certification (e.g. RN/RPN/CPM)	24
Public Health credentials (e.g. CHES/MCHES/CPH/MPH/RHES)	21
Others	26
Not identified	101
Total	172

More than half participants (55.7%) in this study hold a professional credential, with some of them hold more than one credentials. There were a wide variety of credentials that these professionals hold as public health workers that were granted by various organizations. Table 4.2.3 listed the professional credentials hold by participants in this study and Table 4.2.4 listed the credential agencies where public health professionals get their credentials. Out of these participants that hold a professional credential, 84.2% stated that they participated in the continuing education activities to maintain their professional certification.

Table 4.2.4. Credentialing Agencies for Public Health Professionals

Organization	Frequency
Public Health Credentialing Agencies (NCHEC/National Board of Public Health Examiners/NEHA/Environmental Health Professionals)	19
Nursing Credentialing Agencies (e.g. Georgia Board of Nursing, Association of Nursing Educators/American Nurses association)	18
Others	33
Not Identified	102
Total	172

4.3. Participation in Formal, Informal and Incidental Learning

This section aims to assess research question 1: To what extent do the public health professionals participate in formal, informal and incidental learning for professional development? In order to measure the participation in learning, we used the instrument developed by Watkins and O'Neil (2013). This instrument described various opportunities of

formal, informal, and incidental learning for professionals. The participants were asked to identify various learning opportunities based on the (1) availability of these learning opportunities and (2) on their actual participation in the learning activities.

In assessing formal learning opportunities, the instrument measured: (1) the availability of learning and (2) their participation on the following activities in the last six months: 1) Seminars or conferences offered in-house; 2) Seminars or conferences off-site; 3) Videotapes or webinars on work-related topics available to view; 4) Web-based courses, desk-top learning, or other computer-based instructional materials available; and 5) Tuition reimbursement to attend formal university courses.

The analysis showed that not all participants that identified the availability of formal learning in their organization actually participated in these learning opportunities. The most identified and participated formal learning opportunities were: 1) Seminars or conferences of-site; and 2) Videotapes or webinars on work-related topics available to view. Table 4.3.1 describes the frequencies of the participants that identify the availability of the formal learning opportunities in their organization and those who actually participated in these learning.

According to the table, 71 out of 90 participants that identified the availability of the seminars or conferences off-site were actually participated in it (78.9%). The similar high percentages were found in other formal learning activities where: 1) 68 out of 85 participants participated in videotapes or webinars (80%); 2) 56 out of 80 participants participated in seminars or conferences offered in-house (70%); and 3) 57 out of 78 participants participated in web-based courses, desk-top learning, or other computer-based instructional materials available (73.1%). A different result was found in the last activity of the formal learning activities in which

only 1 out of 22 participants were actually taking advantage of the tuition reimbursement to attend formal university courses provided by their organization (4.5%).

Table 4.3.1. Formal Learning Opportunities and Actual Participation in Learning

Formal Learning Opportunities In the Last Six Months	Available*		Participated**	
	Freq	%	Freq	%
Seminars or conferences off-site	90	52.3	71	78.9
Videotapes or webinars on work-related topics available to view	85	49.4	68	80
Seminars or conferences offered in-house	80	46.5	56	70
Web-based courses, desk-top learning, or other computer-based instructional materials available	78	45.3	57	73.1
Tuition reimbursement to attend formal university courses	22	12.8	1	4.5

* Total sample: All Participants in the study (172 participants)
**Total Sample: Participants who identified the availability of each learning activity in their organization (different total number of sample for each activity depending on the number shown in the available (*) column)

In regards to informal learning opportunities, the instrument assessed (1) the availability of these informal learning opportunities and (2) their participation in the following opportunities in the last six months: 1) A library with professional journals and books; 2) Membership dues to professional associations or networks; 3) Formal mentoring from supervisors on professional and career development; 4) Performance planning—getting performance expectations from supervisors based on organizational goals; 5) Performance planning—getting performance expectations from clients or customers; 6) Performance planning—setting performance objectives for personal development needs; 7) Computerized information bases available to support your work; 8) Job aids, checklists, tools, etc. from peers, supervisor; 9) Structured critiquing sessions on one's work with peers or supervisors.

According to the analysis, the most common informal learning opportunities identified by the participants were: 1) Receiving performance expectations from their supervisors based on the organizational goals; and 2) Setting performance objectives for personal development needs.

These participants who identified the availability of informal learning opportunities in their organization may not always participated in these learning activities. Table 4.3.2 describes the frequencies and related percentage of the availability and the actual participation of participants in the informal learning opportunities.

Table 4.3.2. Informal Learning Opportunities and Actual Participation in Learning

Informal Learning Opportunities In the Last Six Months	Available*		Participated**	
	Freq	%	Freq	%
Performance planning—getting performance expectations from supervisors based on organizational goals	78	45.3	57	73.1
Performance planning—setting performance objectives for personal development needs	66	38.4	48	72.7
Computerized information bases available to support your work	62	36.0	47	75.8
Job aids, checklists, tools, etc. from peers, supervisor	55	32.0	38	69.1
Membership dues to professional associations or networks	49	28.5	33	67.3
A library with professional journals and books	47	27.3	22	46.8
Structured critiquing sessions on one's work with peers or supervisors	46	26.7	25	54.3
Performance planning—getting performance expectations from clients or customers	41	23.8	28	68.3
Formal mentoring from supervisors on professional and career development	32	18.6	16	50.0

* Total sample: All Participants in the study (172 participants)
**Total Sample: Participants who identified the availability of each learning activity in their organization (different total number of sample for each activity depending on the number shown in the available (*) column)

According to the table 4.3.2, many of those participants who identified the availability of these informal learning activities actually participated in these learning. The table shows the following: 1) 57 out of 78 participants that identified the availability of a performance expectations from supervisors based on organizational goals actually participated in it (73.1%); 2) 48 out of 66 participants that identified the availability of a performance objectives for personal development needs actually participated in it (72.7%); 3) 47 out of 62 participants that

identified the availability of a computerized information bases actually participated in it (75.8%); 4) 38 out of 55 participants that identified the availability of a job aids, checklists, tools, etc. from peers, supervisor actually participated in it (69.1%); 5) 33 out of 49 participants that identified the availability of a membership dues to professional associations or networks actually participated in it (67.3%); 6) 22 out of 47 participants that identified the availability of a library with professional journals and books actually participated in it (46.8%); 7) 25 out of 46 participants that identified the availability of a structured critiquing sessions with peers or supervisors actually participated in it (54.3%); 8) 28 out of 41 participants that identified the availability of a performance expectations from clients or customers actually participated in it (68.3%); and 9) 16 out of 32 participants that identified the availability of a formal mentoring from supervisors actually participated in it (50%).

In incidental learning opportunities, the online survey assessed the availability and participation in the following in the last six months: 1) Observing supervisor in the process of performing tasks; 2) Observing peers in the process of performing tasks; 3) Seeing models of "best practice," other finished products; 4) Working with supervisor on joint tasks; 5) Working with peers on joint tasks; 6) Working on new projects, working with new clients; 7) Getting personal performance feedback from supervisors; 8) Getting personal performance feedback from peers; 9) Getting personal performance feedback from clients/customers; 10) Sharing "war stories" or other problematic situations with peers or supervisors; 11) Getting tips on how to complete a task from peers or supervisors; 12) Shadowing or working beside expert job performers; 13) Problem-solving with peers or supervisors; 14) Reviewing errors or unexpected occurrences with peers or supervisors; 15) Reviewing the development or history of task procedures or conditions; 16) Identifying and discussing best practices used in other

organizations; 17) Discussing quality improvement suggestions with peers, supervisors; 18) Reviewing significant trends, new laws, and other issues which may affect your work with peers, supervisors.

Table 4.3.3. Incidental Learning Opportunities and Actual Participation in Learning

Incidental Learning Opportunities In the Last Six Months	Available*		Participated**	
	Freq	%	Freq	%
Problem-solving with peers or supervisors	89	51.7	77	86.5
Working with peers on joint tasks	87	50.6	77	88.5
Reviewing significant trends, new laws, and other issues which may affect your work with peers, supervisors	81	47.1	65	80.2
Getting personal performance feedback from supervisors	80	46.5	59	73.8
Sharing “war stories” or other problematic situations with peers or supervisors	80	46.5	69	86.3
Working on new projects, working with new clients	76	44.2	64	84.2
Discussing quality improvement suggestions with peers, supervisors	76	44.2	66	86.8
Getting tips on how to complete a task from peers or supervisors	70	40.7	54	77.1
Working with supervisor on joint tasks	69	40.1	59	85.5
Reviewing errors or unexpected occurrences with peers or supervisors	67	39	56	83.6
Identifying and discussing best practices used in other organizations	58	33.7	46	79.3
Observing peers in the process of performing tasks	56	32.6	45	80.4
Getting personal performance feedback from peers	53	30.8	37	69.8
Seeing models of “best practice,” other finished products	50	29.1	39	78.0
Reviewing the development or history of task procedures or conditions	50	29.1	40	80.0
Observing supervisor in the process of performing tasks	49	28.5	32	65.3
Getting personal performance feedback from clients/customers	47	27.3	36	76.6
Shadowing or working beside expert job performers	29	16.9	9	31.0

* Total sample: All Participants in the study (172 participants)

**Total Sample: Participants who identified the availability of each learning activity in their organization (different total number of sample for each activity depending on the number shown in the available (*) column)

According to the analysis, participants commonly encounter incidental learning opportunities through the following activities: 1) Problem-solving with peers or supervisors and 2) Working with peers on joint tasks. Table 4.3.3 describes the frequencies and the related percentage of the participants' identification of the incidental learning opportunities and their participation in these learning activities. According to the table 4.3.3, the following are the number of participants that actually participated in incidental learning activities out of those who identified the incidental learning is available in their workplace: 1) 77 out of 89 (86.5%) in problem-solving with peers or supervisors; 2) 77 out of 87 (88.5%) in working with peers on joint tasks; 3) 65 out of 81 (80.2%) in reviewing significant trends, new laws, and other issues with peers, supervisors; 4) 59 out of 80 (73.8%) in getting personal performance feedback from supervisors; 5) 69 out of 80 (86.3%) in sharing "war stories" or other problematic situations with peers or supervisors; 6) 64 out of 76 (84.2%) in working on new projects, working with new clients; 7) 66 out of 76 (86.8%) in discussing quality improvement suggestions with peers, supervisors; 8) 54 out of 70 (77.1%) in getting tips on how to complete a task from peers or supervisors; 9) 59 out of 69 (85.5%) in working with supervisor on joint tasks; 10) 56 out of 67 (83.6%) in reviewing errors or unexpected occurrences with peers or supervisors; 11) 46 out of 58 (79.3%) in identifying and discussing best practices used in other organizations; 12) 45 out of 56 (80.4%) in observing peers in the process of performing tasks; 13) 37 out of 53 (69.8%) in getting personal performance feedback from peers; 14) 39 out of 50 (78%) in seeing models of "best practice," other finished products; 15) 40 out of 50 (80%) in reviewing the development or history of task procedures or conditions; 16) 32 out of 49 (65.3%) in observing supervisor in the process of performing tasks; 17) 36 out of 47 (76.6%) in getting personal performance feedback

from clients/customers; 18) 9 out of 29 (31%) in shadowing or working beside expert job performers.

Table 4.3.4. The Mean of Formal, Informal, and Incidental Learning Opportunities and Actual Participation in Learning Activities

	Mean	Std. Deviation
Formal Available	46.79	34.44
Informal Available	60.11	31.69
Incidental Available	51.33	34.46
Formal Participated	53.27	29.81
Informal Participated	66.32	26.70
Incidental Participated	54.47	31.70

The means of the availability of formal, informal, and incidental learning opportunities identified and participated in by the participants in this study are describe in Table 4.3.4. In average, 47 participants in this study identified the availability of the formal learning opportunities, 60 participants identified the informal learning opportunities and 51 participants identified the incidental learning opportunities. The online survey also asked participants to inform their participation on these learning opportunities. In average, 53 participants in this study participated in formal learning, 66 participated in informal learning, and 54 participated in incidental learning.

4.4. The Learning Culture at Individual, Team, and Organizational Levels

This section aims to assess research question 2: How do public health professionals describe the learning culture at their organization at individual, team, and organizational levels? The learning culture of public health professionals was also measured in order to understand the positive environment for learning. The short version of The Dimensions of The Learning

Questionnaire (DLOQ) was used in this study to measure the learning culture in the organization where these public health professionals work. The DLOQ was developed by Marsick and Watkins (1990) and has been used in previous research in various organizations to measure the learning culture of professionals.

The short DLOQ has 21 items that measure the learning culture at individual, team or group, and organizational level. These 21 items were representing the seven dimensions of the learning organization. According to Marsick (2013, p. 130), these seven learning dimensions are: *Create continuous learning opportunities* (CL), *promote inquiry and dialogue* (DI), *encourage collaboration and team learning* (TL), *establish systems to capture and share learning* (ES), *empower people toward a collective vision* (EP), *connect the organization to its environment* (SC), *and provide strategic leadership for learning* (PL). The mean of each item was then compared to the mean of each dimension to understand about the level of perception of the learning culture. Table 4.4.1 describes both means of the item and the means of dimensions of learning culture.

There are 6 items in the individual level, the following are the items in the individual level: 1) In my organization, people help each other learn; 2) In my organization, people are given time to support learning; 3) In my organization, people are rewarded for learning; 4) In my organization, people give open and honest feedback to each other; 5) In my organization, whenever people state their view, they also ask what others think; and 6) In my organization, people spend time building trust with each other. The first three items in the individual level belong to the learning dimension of *create continuous learning opportunities* (CL), and the next three items in the individual level belong to the dimension of *promote inquiry and dialogue* (DI).

According to Table 4.4.1, in the first dimension of learning culture of *create continuous learning* (CL), the following learning culture has the higher mean when compared to the mean of their learning dimensions: 1) In my organization, people help each other learn; and 2) In my organization, people are given time to support learning. In the dimension of *promote dialogue and inquiry* (DI), the following have higher mean when compared to the mean of learning dimension: 1) In my organization, people give open and honest feedback to each other; and 2) In my organization, people spend time building trust with each other.

In the team or group level, the short DLOQ has 3 items as the following: 1) In my organization, teams/groups have the freedom to adapt their goals as needed; 2) In my organization, teams/groups revise their thinking as a result of group discussions or information collected; and 3) In my organization, teams/groups are confident that the organization will act on their recommendations. These three items belong to the learning dimension of *encourage collaboration and team learning* (TL). In the dimension of *encourage collaboration and team learning* (TL), the following have the higher mean compared to the their learning dimension: 1) In my organization, teams/groups have the freedom to adapt their goals as needed; and 2) In my organization, teams/groups revise their thinking as a result of group discussions or information collected.

As for the organizational level, the short DLOQ has the total of 12 items as the following: 1) My organization creates systems to measure gaps between current and expected performance; 2) My organization makes its lessons learned available to all employees; 3) My organization measures the results of the time and resources spent on training; 4) My organization recognizes people for taking initiative; 5) My organization gives people control over the resources they need to accomplish their work; 6) My organization supports employees who take calculated risks; 7)

My organization encourages people to think from a global perspective; 8) My organization works together with the outside community to meet mutual needs; 9) My organization encourages people to get answers from across the organization when solving problems; 10) In my organization, leaders mentor and coach those they lead; 11) In my organization, leaders continually look for opportunities to learn; and 12) In my organization, leaders ensure that the organization's actions are consistent with its values. These 12 items are divided into every three items that belong to the learning dimension of *establish systems to capture and share learning* (ES), *empower people toward a collective vision* (EP), *connect the organization to its environment* (SC), and *provide strategic leadership for learning* (PL).

The only item that has the higher mean compared to the mean of learning dimension in *establish systems to capture and share learning* (ES) is the item of *My organization creates systems to measure gaps between current and expected performance*. As for the dimension of *empower people toward a collective vision* (EP), the following are those with the higher mean than the mean of their learning dimension: 1) *My organization recognizes people for taking initiative*; and 2) *My organization gives people control over the resources they need to accomplish their work*. As for the dimension of *connect the organization to its environment* (SC), the only item that has the higher mean than its learning dimension is *my organization works together with the outside community to meet mutual needs*. Lastly for the dimension of *provide strategic leadership for learning* (PL), the following have higher mean comparing to the mean of the learning dimension: 1) *In my organization, leaders continually look for opportunities to learn*; and 2) *In my organization, leaders ensure that the organization's actions are consistent with its values*.

Table 4.4.1. Perception of the Learning Culture

Dimension of Learning Culture Items	Mean	DLOQ Mean	std.dev
Individual Level			
1. Create continuous learning opportunities (CL)			
People help each other learn.	4.62	4.22	1.193
People are given time to support learning.	4.29	4.22	1.322
People are rewarded for learning.	3.65	4.22	1.465
2. Promote inquiry and dialogue (DI)			
People give open and honest feedback to each other.	3.89	3.90	1.324
Whenever people state their view, they also ask what others think.	3.81	3.90	1.346
People spend time building trust with each other.	3.91	3.90	1.371
Team or group level			
3. Encourage collaboration and team learning (TL)			
Teams/groups have the freedom to adapt their goals as needed.	4.18	4.10	1.325
Teams/groups revise their thinking as a result of group discussions or information collected.	4.42	4.10	1.187
Teams/groups are confident that the organization will act on their recommendations.	3.59	4.10	1.262
Organization level			
4. Establish systems to capture and share learning (ES)			
My organization creates systems to measure gaps between current and expected performance.	3.76	3.58	1.381
My organization makes its lessons learned available to all employees.	3.48	3.58	1.454
My organization measures the results of the time and resources spent on training.	3.33	3.58	1.474
5. Empower people toward a collective vision (EP)			
My organization recognizes people for taking initiative.	4.05	3.89	1.382
My organization gives people control over the resources they need to accomplish their work.	3.97	3.89	1.238
My organization supports employees who take calculated risks.	3.53	3.89	1.272
6. Connect the organization to its environment (SC)			
My organization encourages people to think from a global perspective.	4.03	4.38	1.411
My organization works together with the outside community to meet mutual needs.	4.77	4.38	1.229
My organization encourages people to get answers from across the organization when solving problems.	4.24	4.38	1.302
7. Provide strategic leadership for learning (PL)			
Leaders mentor and coach those they lead.	3.94	4.23	1.440
Leaders continually look for opportunities to learn.	4.29	4.23	1.336
Leaders ensure that the organization's actions are consistent with its values.	4.34	4.23	1.393

4.5. Perception of Learning Culture and Levels Participation in Learning

This section aims to assess research question 3: To what extent does perception of a high learning culture relate to high levels participation in formal, informal and incidental learning among public health professionals? Table 4.5.1 showed the correlation table of variables in this study by comparing the means of participants who identified the availability of formal, informal, and incidental learning. The table also describes the correlation by comparing the means of participants who participated in formal, informal, and incidental learning opportunities in their organization. According to the table all variables have significant correlation at the 0.01 level (2-tailed) because the value of r are between 0-1 which means the variables tend to increase or decrease together.

Table 4.5.1. Correlation of Variables

		Formal Participated	Informal Participated	Incidental Participated
Formal Available	Pearson Correlation	.523**	.372**	.469**
	Sig. (2-tailed)	.000	.000	.000
	N	136	136	136
Informal Available	Pearson Correlation	.377**	.527**	.511**
	Sig. (2-tailed)	.000	.000	.000
	N	136	136	136
Incidental Available	Pearson Correlation	.402**	.444**	.677**
	Sig. (2-tailed)	.000	.000	.000
	N	136	136	136

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.5.2 showed the relationship between all learning opportunities and seven dimensions of learning organization: 1) Formal learning available (FoAv); 2) Informal learning available (InfAv); 3) Incidental learning available (IncAv); 4) Formal learning participation (FoP); 5) Informal learning participation (InfP); 6) Incidental learning participation (IncP); 7)

Continuous Learning (CL); 8) Dialogue & Inquiry (DI); 9) Team Learning (TL); 10) Establish systems (ES); 11) Empower People (EP); 12) System Connection (SC); and 13) Strategic Leadership (PL).

Table 4.5.2. Correlation of Learning and Seven Dimensions of Learning Organization

		FoAv	InfAv	IncAv	FoP	InfP	IncP
CL	Pearson	.218*	.260**	.296**	.056	.213*	.322**
	Sig.	.018	.005	.001	.550	.021	.000
	N	117	117	117	117	117	117
DI	Pearson	.164	.216*	.266**	.075	.198*	.358**
	Sig.	.077	.019	.004	.420	.032	.000
	N	117	117	117	117	117	117
TL	Pearson	.180	.201*	.246**	.011	.154	.285**
	Sig.	.052	.029	.007	.905	.096	.002
	N	117	117	117	117	117	117
ES	Pearson	.226*	.309**	.293**	.061	.214*	.258**
	Sig.	.015	.001	.002	.519	.022	.005
	N	115	115	115	115	115	115
EP	Pearson	.170	.243**	.246**	-.033	.197*	.219*
	Sig.	.067	.008	.007	.726	.034	.018
	N	117	117	117	117	117	117
SC	Pearson	.263**	.296**	.289**	.074	.263**	.308**
	Sig.	.004	.001	.002	.428	.004	.001
	N	117	117	117	117	117	117
PL	Pearson	.207*	.330**	.353**	.074	.241**	.355**
	Sig.	.025	.000	.000	.425	.009	.000
	N	117	117	117	117	117	117

**. Correlation is significant at 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed).

According to the table 4.5.2, most of variables in learning opportunities and dimensions of learning organization (DLOQ) are significantly correlated with each other. However, it seems

that many of the variables do not have significant correlation when comes to formal learning availability and participation. In this study, the seven dimensions of learning culture (CL, DI, TL, ES, EP, SC, and PL) in the organization do not seem to be correlated with the participation in formal learning (FoP).

4.6. Professional Development Activities

The last section of the online survey asked the participants about their experience and preference in learning to enhance their professional skills. There were three questions that we used to gather the information. The questions were: 1) In your perception, what learning experiences most positively contribute to the improvement of your job performance?; 2) Are you currently part of an informal learning group?; 3) Which type of learning do you prefer most and why? The results showed that there are various answers provided by the participants in this study to describe their experience that has the most contribution to the improvement of their job performance. These answers covered all types of learning opportunities, formal, informal and/or incidental learning experience at individual, team/group, and organizational level. Table 4.6.1 categorized these answers from the participants based on formal, informal or incidental learning.

According to the table, on the scope of formal learning experiences, the participants identified formal courses, training and workshops, conferences and webinars as those learning experiences that contribute to their job performance. Few of the participants specified the additional training in leadership, management, policy, crucial conversation, and team building. In regards to the incidental learning experiences, the participants listed many activities that can be categorized as those activities they experienced in the workplaces. Mentoring and coaching, setting goals, meetings, and various professional development activities were those categories that participants in this study used to learn informally.

As for incidental learning, participants stated that they learn while implementing their responsibility on the job. Other experiences that also contributed to their job performance can be categorized as the following: Learning about "Best Practice", working with teams/groups and other public health professionals from other organizations, constant communication with supervisor / managers, performance feedback (from customers, peers, and supervisors), organization strategic planning activities, and shadowing peers and supervisor. Participants also mentioned several learning activities that related to accreditation of health departments, financial support and reward for taking initiatives, self-motivation and initiation to learn, reading, freedom to work independently and take risks, flexibility of learning styles, being a leader and helping others, and customer service and staff motivation.

Most participants in this study (66.1%) stated that they did not have informal group learning, and only 33.9% of the participants are member to an informal learning group. Participants who answered that they are part of informal learning group then were asked to compare their experience in learning in formal and informal learning group. More than half of participants in this study (52.5%) prefer to learn informally rather than learning formally provided by their formal professional association (47.5%). They were then asked to give their personal reason of their choices. The reasons of their preference are unique to each individual for those who prefer learning formally and those who prefer to learn informally. Table 4.6.2 categorized these answers from participants who prefer to learn formally and table 4.6.3 categorized these answers from participants who prefer to learn informally.

According to table 4.6.2, many of these participants stated that formal learning considered more credible, professional, focused, detailed, comprehensive, and provide the most up to date information about trends and research in public health professions. Participants also

stated that they prefer to learn formally because they are led by the expert in the field when participating in formal professional learning. Another reason that formal learning is more preferable by the participants is because some of these formal learning activities provide credits that can be used to maintain their professional credentials.

Table 4.6.1. Learning Experiences that Contributes to the Job Performance

Learning Experiences that Contributes to the Job Performance
Formal Learning
Formal university based courses Trainings and workshops (e.g. Leadership, management, policy, crucial conversation, team building) Conferences Webinars
Informal Learning
Mentoring and Coaching (from Supervisors, peers, other similar organizations) Setting achievable goals & objectives One-on-one meetings and Q&A sessions Professional Development in various areas
Incidental Learning
Actual job implementation experience Learning about "Best Practice" Working with teams/Groups and other public health professionals from other organizations Constant communication with supervisor / Managers Performance feedback from customers, peers, and supervisors Organization strategic planning activities Shadowing peers and supervisor
Others
Accreditation of health departments Financial support and reward for taking initiatives Self motivation and initiation to learn Reading Freedom to work independently and take risks Flexibility of learning styles Being a leader and helping others Customer service & staff motivation

Table 4.6.2. Reasons for Participation in Formal Learning Opportunities

Reasons for Participation in Formal Learning Vs. Informal Learning
Credibility and professional delivery of information
Experts are invited in to provide training and networking with peers across the state
Focused, more structured, and well organized presentation
Opportunity to ask the experts questions and to learn from others who may experience similar issues.
Provide the most up to date information on the professional trends and research.
More detailed and comprehensive
Opportunity for continuing education and other credits

Table 4.6.3. Reasons for Participation in Informal Learning Opportunities

Reasons for Participation in Informal Learning Vs. Formal Learning
Ability to discuss issues with fewer distractions
Dialogue and brainstorming
More open to engage in discussion, ask questions and get an understanding
More honest/direct about failures whereas formal organization tend to discuss success only
More relaxed environment to express ideas/solutions/questions
Insights on "what works here" and how people will respond to a change
Provide more confidentiality
More practical and oriented to a specific task and intended outcome
More time for discussion from personal experiences
Real life and pertinent experience rather than book-learning experience
More enthusiasm, commitment, energy

As for participants who prefer to learn informally, table 4.6.3 categorized the answers of the participants into the following: 1) Ability to discuss issues with fewer distractions; 2) Dialogue and brainstorming; 3) More open to engage in discussion, ask questions and get an understanding; 4) More honest/direct about failures whereas formal organization tend to discuss success only; 5) More relaxed environment to express ideas/solutions/questions; 6) Insights on "what works here" and how people will respond to a change; 7) Provide more confidentiality; 8) More practical and oriented to a specific task and intended outcome; 9) More time for discussion

from personal experiences; 10) Real life and pertinent experience rather than book-learning experience; and 11) More enthusiasm, commitment, energy.

4.7. Summary

Participants in this study self-identified themselves as public health professionals where the majority identifying as female, married, non Hispanic, White or Caucasian, and working in a nonprofit institution. The average age of participants were 47 years old with most holding a higher position in the organization. However, there were a wide variety of job titles found in this study that may or may not be influenced by background, highest degree and the field of study of the participants.

More than half of the participants in this study hold professional credentials that are granted by many different organizations. A few of the participants even hold more than one professional credential. Although many of these credentials are in public health or other health related fields, many of them are not. For those who possessed professional credentials, they mostly participated in learning activities that offer credits to maintain their credentials.

The participants in this study also identified several learning activities that were included in the online survey. These activities measured the learning culture and the availability of learning opportunities in their organization. Many of the participants scored the learning environment in their workplace higher than the means of each learning dimension in the short DLOQ. The participants also asked to identify learning opportunities in their organization that cover formal, informal, and incidental learning. The results suggest that there are particular activities that are commonly found in the organizations. Many of these participants that identified the availability of learning opportunities in their organization actually participated in

these learning activities. In addition, all variables in this study found to be significantly correlates to each other.

This study also asked the participants about their activities in learning groups. Many of the participants mentioned that they only have a formal learning group. For some who said that they have an informal learning group, they may choose their preference in learning between these two groups. There were a wide variety of answers that were given by the participants to describe their preference in learning. These reasons were unique to each individual although these reasons may be similar to the reasons given by other public health professionals in other studies.

CHAPTER 5

DISCUSSION, IMPLICATION, AND RECOMMENDATIONS

The purpose of this study is to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals. This study was conducted to answers the following research questions: (1) To what extent do the public health professionals participate in formal, informal and incidental learning for professional development?; (2) How do public health professionals describe the learning culture at their organization at individual, team, and organizational levels?; and (3) To what extent does the perception of a high learning culture relate to high levels of participation in formal, informal and incidental learning among public health professionals?

An online survey was distributed to the participants from the database of the Georgia Public Health Training Center (GPHTC) under the University of Georgia. After 10 weeks of data collection, the total participants of this study are 172 public health professionals. This chapter discusses the findings, limitations and recommendation for future research.

5.1. Findings of the Study

The first section of the online survey assessed the participant's age, gender, institution, job titles, public health background, highest educational degree, field of study of their highest degree, marital status, race and ethnicity, professional credential/certification, the organizational body that granted them the professional certification, and their participation in continuing education activities.

In regard to the age, the average and median age of the participants were 47 years old. The mature age of participants may indicate that in overall participants have adequate amount of time in their profession as public health educators. The experience of our participants may provide rich information in regard to their observation and participation in many learning activities in their profession through formal, informal and incidental at individual, team/group and organizational levels. As for gender and race/ethnicity, the answers that were given by the participants were in agreement with the previous studies by Glascoff et al. (2005) that were conducted in North Carolina. According to the study conducted by Glascoff et al. (2005), most public health professionals in North Carolina were white females. The similar result was found in this study where participants identified themselves as female public health professionals (69.4%), White or Caucasian (83%) and non Hispanic (98.1%).

In regards to participant's background, highest educational degree and field of study of their highest degree, the majority of participants in this study had public health background and hold master's degree in public health or health sciences related field. This similar finding was found in a study by Glascoff et al. (2005) where public health professionals in North Carolina are more likely to have public health degrees. Some believe that having a public health degree or public health background may not always be necessary to work as public health educators. If we refer back to the definition of public health, there are many fields outside public health that can contribute to the profession. In this study, when not reporting a degree or background in public health, a wide variety of fields were identified by the participants. These various degrees included but were not limited to business, education, sociology, theology, social work, and chemistry. These many varieties of backgrounds and education emphasize the important aspect

of continuing professional education for public health professionals to be able to provide the best services to their community.

For example in the field of health promotion, public health educators need to be able to perform 163 sub competencies in their profession (Gilmore et al., 2005). However previous research shows there are gaps between the previous knowledge from their formal education and the actual knowledge needed for the job in the field of health promotion (Finocchio et al., 2003; Galer-Unti & Tappe, 2006). A panel of experts identified 8 broad areas of competency that are most needed among currently employed health educators, they are: 1) advocacy; 2) business management and finance; 3) communication; 4) community health planning and development, coalition building, and leadership; 5) computing and technology; 6) cultural competency; 7) evaluation; and 8) strategic planning (Allegrante et al., 2001).

However, many more competencies were identified by previous studies as needing to be included in additional training: 1) Cultural competency (Luquis et al., 2006); 2) Ethics (Coughlin et al., 1999; Schmaling & Blume, 2009; Shive & Marks, 2008); 3) Advocacy (Galer-Unti & Tappe, 2006; Radius et al., 2009); and 4) Designing data-collection instruments, securing fiscal resources, interpreting evaluation and research results, carrying out evaluation and research plans, and developing plans for evaluation and research (Davidson, 2008).

These articles showed the expected skill competencies of health professionals and have expanded the corresponding curriculum adjustment needed in order to fill the gap between degree program and demand of the professional work. Continuing education should be able to have adequate contents, instructors and methods of delivery to serve this purpose. The continuing education providers and organizations need to understand these needs and create learning opportunities based on the need of their professional members.

A wide variety of job titles for were also reported in this study, Director and Program Coordinator/Manager/Supervisor are the most common position of the participants in this study. There were a wide variety of job titles that were also found in the health promotion field. In a study by Gambescia et al. (2009), employers of health educators responded that they use the title Health Educators (75%), Health Program/Project Administrator/Manager (38%), Health Education Specialist (28%), and others (22%). However, as public health educators, these different job titles still need to include the basic competencies in the following areas of responsibilities: 1) Assess needs, assets, and capacity for health education; 2) Plan health education; 3) Implement health education; 4) Conduct evaluation and research related to health education; 5) Administer and manage health education; 6) Serve as a health education resource person; 7) Communicate and advocate for health and health education (American Public Health Association [APHA], n.d)

In this study we did not ask the participants to describe their job description, however, a study by Johnson et al. (2005) found that the greatest percentage of time was spent implementing programs (21.2%). Another study by Glascoff et al. (2005) found that two third of public health professionals in North Carolina mentioned that they have administrative responsibilities as part of their job description. The various job titles and responsibilities of public health professionals warrant some basic standard of practice of these professionals. Professional associations have the role of maintaining and developing the standard of practices for their professional members to ensure the best services in the profession. Many public health educators stated that they joined professional associations to maintain CHES credentials: advancing the profession, and networking with other professionals (Thackeray et al., 2005).

Many of these public health professionals worked at private or profit institution, but majority of public health professionals worked in a nonprofit institutions. The findings of this study showed a significant amount of participants worked in a nonprofit institution (90.6%). The participants were not asked to identify the organizations where they are currently working, however previous studies conducted by Finocchio et al. (2003) described that the majority of public health professionals worked in local health departments and community-based organizations that were commonly a nonprofit organization. A low number of respondents in this study identified their organization as a for profit organization. These for profit organizations are usually a form of privatization of resources as an effect of funding cuts in healthcare or lack of available resources by these health departments or community based organizations. A study by Demers and Mamary (2008) found that funding cuts and privatization of resources are some of the topics discussed by the public health professionals in their study. With the lack of resources and these funding cuts, privatization of resources has generally had a positive effect on the roles of public health professionals (Bibeau, Lovelace, & Stephenson, 2001). The study also suggested privatization of resources may produce more time for local health department to address the core public health functions and for these professionals to engage in appropriate professional activities (Bibeau et al., 2001).

In regards to the professional credentialing and the organizational bodies that granted the professional credential, 55.7% of the participants in this study reported that they have professional credentials that were granted by various organizations. Many of the participants in this study hold credentialing in the nursing professions and other public health field. Many have multiple professional credentials that were granted by multiple organizations. In the public health field, the most common credential is called a Certified Health Education Specialist (CHES). As

found in this study, a study by Glascoff et al. (2005) reported that most public health professionals did not have the Certified Health Education Specialist (CHES) credential that was granted by The National Commission for Health Education Credentialing, Inc (NCHEC). Despite the fact that 90% of public health professionals are aware of health education degree programs and 82% were aware of CHES credential (Gambescia et al., 2009), many of them do not pursue this credential. This trend may be related to many employers who in fact do not require their public health employee to hold a professional credential. According to a study by Gambescia et al. (2009), although eighty four percent of the employers felt that it was important to hire professional health educators, 56% of them did not specifically recruited public health professionals with CHES credential.

The establishment of professional standards is important to enhance the quality of practice in any discipline or profession, including in the public health field. In the United States, a national credentialing system for health promotion, administered by NCHEC, was established in 1988 (Taub et al., 2009). A variety of accreditation processes are now in place and available to academic programs in colleges and universities to enhance the quality of professional preparation. These accreditation processes are usually voluntary but may provide standards for the academic professional preparation for public health professional as a unified system of accreditation (Allegrante et al., 2001). The majority of public health professionals stated that they have the intention to support and participate in a national, coordinated, profession wide accreditation system in health education (Bernhardt et al., 2003). The same study suggested that the accreditation system should be comprehensive, flexible, build on the strength of the accreditation system, and be linked to individual certification, and the accreditation should not be for individuals only, but also for the degree program in health education (Bernhardt et al., 2003).

Out of these participants in this study that hold a professional credential, 84.2% stated that they participated in continuing education activities to maintain their professional certification. We did not ask the participants to clarify their reasons to maintain their professional credential, but according to a study by McKenzie and Seabert (2009), those who wished to maintain their CHES stated the following reasons: 1) Improve the chances of getting a job; 2) Show that they are competent to practice health education; and 3) Helping to advance in their profession.

Despite whether or not the participants in this study hold professional credentials, they were asked to identify learning opportunities in their organization. These learning opportunities cover those activities included in formal, informal, and incidental learning in their organizations. This study suggested that many of the participants were aware of these learning opportunities in their organization, but many also responded they were not aware of learning activities in their organization. For participants who identified that these learning activities were available in their organization, many of them also stated that they participated in these learning activities in the last six months.

The most common formal learning opportunities that were identified by the participants in this study are seminars or conferences off-site (52.3%). This finding is supported by the previous study by Davidson (2008). A study by Davidson (2008) found that public health professionals preferred to attend seminars or conferences in order to continue their professional learning, attend professional association annual meeting, and complete home self-study print materials. However this study also found that despite the high awareness of the availability of seminars or conferences offsite, only 78% total of them actually participated in these conferences or seminars.

There are many reasons of the lack of participation in formal learning opportunities that were found in previous studies. A study by Demers and Mamary (2008) found two main reasons behind this lack of participation in these formal learning opportunities, they are the cost of participation and the heavy workload of public health professionals. As showed in this study, a low number of participants stated that they were reimbursed to participate in formal learning opportunities. This result is similar to the previous study by Demers and Mamary (2008) that found that although most employers reported supporting continuing education, less than two-thirds of respondents were reimbursed for expenses. Another study by Bower et al. (2007) found that lack of time, financial resources, and administrative support also contributed to the barrier of participating in these formal learning opportunities. A study by Schweitzer and Krassa (2010) found several factors acted as deterrents to nurses' participation in continuing professional development, they are: (1) the cost of attending these learning activities; (2) inability to get time off from work to attend the learning activities; (3) lack of support for child care; and (4) reasons related to home responsibilities.

As found in this current study, the availability of these formal learning opportunities in the workplace is not a guarantee that the learning process will occur. According to Tennant (2000, pp. 126-127) as cited by Choy, Billett, and Kelly (2013, p. 70), these health professionals need to possess the following skills in participating in formal learning opportunities: 1. Learning from instruction; 2. Performing assigned learning tasks; 3. Relating practical experiences to the material being taught and applying the principles derived from theory and research; 4. Basic thoughts, reviewing material for examinations, developing exam techniques; and 5. learning how to generalize and when to generalize.

In regards to the informal learning opportunities, this particular study assessed the participants of their experience in learning informally in their workplace. The majority of participants in this study acknowledge that they learn informally through receiving performance expectations from their supervisors based on the organizational goals (45.3%), and followed by setting performance objectives for personal development needs (38.4%). The role of supervisors in giving positive feedback to these professionals is crucial in providing reflection for areas of improvement. This evaluation process, either from the supervisor or from personal reflection, provides informal learning opportunities for a public health professional to advance in their profession. Previous study by Iseminger and Donaldson (2011) revealed that there were three interrelated themes that emerged from their study about the informal learning activities among health professionals. These three themes were the following: 1). Engagement in authentic work activities 2) Learning from mentors; and 3) The use of physical and social resources and tools (Iseminger & Donaldson, 2011). According to Iseminger and Donaldson (2011), these health professionals primarily learn from their daily work related activities. In order to support the informal learning in the organization, the role of the supervisor in the organization is to give continuous support and provide positive feedback for their public health professionals.

However, the availability of these informal learning opportunities was not always guarantee that the learning process was experienced by health professionals in this study. Tennant and McMullen (2008, p. 525) and cited by Choy et al. (2013, p. 70), stated that these professionals need to have the following skills to be able to learn informally: 1. How to analyze experiences; 2. The ability to learn from others; 3. The ability to act without all the facts available; 4. Choosing among multiple courses of action; 5. Learning about organizational culture; 6. Using a wide range of resources and activities as learning opportunities; and 7.

Understanding the competing and varied interests in the shaping of one's work or professional identity.

In regards to incidental learning opportunities, previous studies showed that much of a professional's learning that is of high valued by professionals were those incidental opportunities experienced in the workplace (Iseminger & Donaldson, 2011). This study showed that the majority of the participants stated that they experienced the following incidental learning opportunities in the workplace: 1. Incidental learning through problem-solving with peers or supervisors (51.7%); and 2. Incidental learning through working with peers on joint tasks (50.6%). These health professionals may not realized many of the incidental learning opportunities are available in their organization. Some of them may not realize that they already participated in these incidental learning opportunities as found in a study by Johnson et al. (2005). A high number of health professional (60%) mentioned that they did not conduct research nor did they participate in activities to advance the profession (Johnson et al., 2005).

We also asked the participants about their informal learning groups. We asked this question in order to be able to ask their preference between learning in formal and informal group. Most participants in this study stated that they did not have informal group learning (66.1%), and only 31.9% of the participants are member of an informal learning group. Participants who answered that they are part of informal learning group were then asked their preference between learning in a formal group and learning in an informal learning group. Most of participants in this study (52.2%) prefer to learn informally and another 47.5% prefer to participate in learning activities provided by their formal professional association. They were then asked to give their personal reason of their choices. The reasons of their preference are unique to each individual for those who prefer learning formally and those who prefer to learn

informally. According to the participants, the formal learning activities are more well-organized, focused, and offered credits for those who have the professional credentials. The participants also said that the formal learning activities are more credible and professional because they are led by experts in the field. As for participants who prefer learning informally, some of these reasons are because informal learning activities provide the opportunity to have honest, open discussion with their peers, supervisors and/or other similar organizations. This informal learning also gives the participants equal opportunities, increases engagement, increases confidentiality and can be geared toward their personal need in a more relaxed environment.

In regards to the learning culture at the individual, team, and organizational levels, the participants have an overall high perception of the learning culture in their organizations. In order to get a better picture of the perception of learning culture of the participants, a line graph was made to compare the results of this study with the previous study on the dimensions of learning culture. The results are compared based on the seven dimensions of the learning culture as the following: *Create continuous learning opportunities* (CL), *promote inquiry and dialogue* (DI), *encourage collaboration and team learning* (TL), *establish systems to capture and share learning* (ES), *empower people toward a collective vision* (EP), *connect the organization to its environment* (SC), and *provide strategic leadership for learning* (PL) (Marsick, 2013, p. 130).

The line graph compares the result of this study (GAPH) and the pervious study conducted by Watkins and Dirani (2013) on meta-analysis of data from 28 companies (INTL NORMS). The result of this study are also compared with a previous study conducted by Watkins et al. (2009) that identified the organizations' capacity to learn and to change to meet current public health demands in four local public health departments (OPHS).

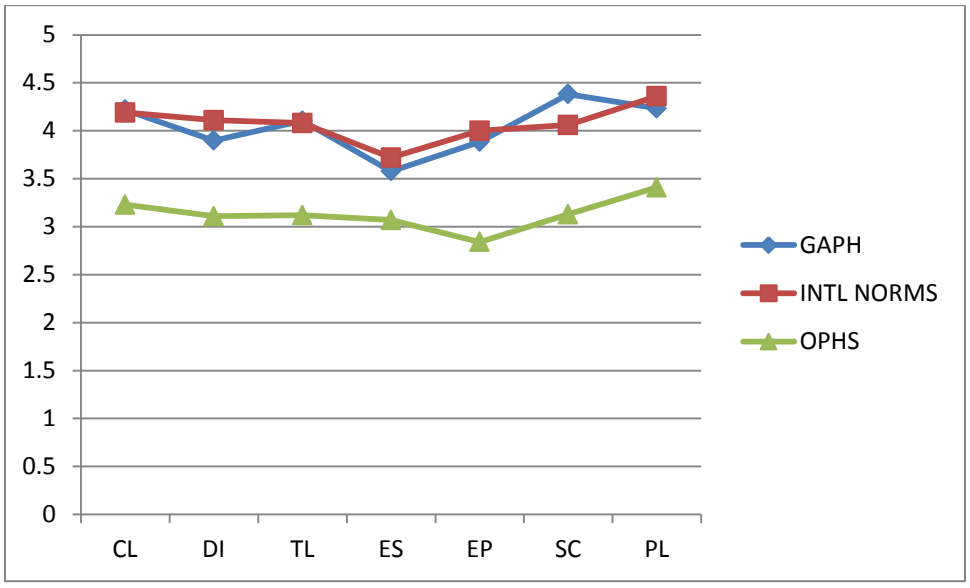

Figure 5.1.1. Line Graph of the Perception of the Learning Culture

According to the line graph, the findings of this study are similar to those conducted by Watkins and Dirani (2013) in which the lowest perception of learning culture were found in the dimensions of *establish systems to capture and share learning* (ES). This information warrants some actions from the organization to improve the systematic methods of performance's feedbacks for public health professionals in order to support their learning. A slightly different result was from the study conducted by Watkins et al. (2009) that show overall lower means than the other two studies. The result might also be the indication that the organization has put some effort over the years from 2009 to 2014 to support the learning process of public health professionals.

As for the relationship between variables in this study, the results indicated that most variables in learning opportunities showed significant correlation to seven dimensions of learning organization. However, it seems that the situation changes when it comes to formal learning participation. Availability of formal learning is only slightly related to the dimensions

of learning culture and does not seem to be related to *dialogue and inquiry* (DI) and *establish systems to capture and share learning* (ES). Participation in formal learning activities is not significantly related to having a learning culture. However, availability and participation in informal and incidental learning activities significantly related to having a learning culture. It is also important to remember that the high perception of learning culture and participation in learning activities may not always indicate that the learning process takes place. It is dependent on the individuals that are involved in these learning activities to take advantages of the knowledge they gain from participating in learning activities to be able to advance in their profession.

5.2. Limitations

As any other study, there are limitations in this study that need to be acknowledged. Despite the advantages offered by online survey, according to Berg (2008), online surveys may have the following challenges: 1) Technology can fail because online survey relies on the capability of computer and the technical capabilities of researcher and participants; 2) Lack of control of the data collection environment because there are no face-to face interaction with participants that also make it difficult to calculate the response estimation; 3) Limited generalizability because the participants without access to the internet and who do not have the ability to complete an online survey will not respond. The researcher acknowledged these challenges of using online survey.

In regards to the chance that technology may fail, we piloted tested the online survey to a group of peers in order to assess the readability, graphic and content. In term of the lack of face-to-face interaction, we put our contact information in the recruitment email that was sent out to the participants in case they need further clarification about the study or about the questions in

the online survey. The participants were given a chance to ask for further clarification about the study and the questions on the online survey.

In regard to the generalizability, the sample may not be considered to be a representation of all public health professionals in the State of Georgia. The sample was chosen from the Georgia Public Health Training Center (GPHTC) because GPTHC has the mission to "assess the needs and build the capacity of the current and future generation of public health workers in governmental public health, health care organizations, and non-profit organizations for the purpose of advancing and improving the health of Georgia citizens" (The Georgia Public Health Training Centre, 2013) and the sample of this study self identified themselves as public health professionals. When we look at the results, the sample of this study would presumably have a significant amount of time as public health professional when we look and see there is a higher age average and in general, higher positions that they hold in their organizations.

In addition to the challenges mentioned by Berg (2008), few of the participants may not be comfortable with using computer for a long time. This challenge was anticipated by the inclusion criteria of our participants. The participants in this study should only be those public health professionals in the state of Georgia that may come from various organizations. These professionals ought to use a computer in their job to strategically plan, implement and evaluate their projects/programs. The online survey also should be completed within 10-15 minutes as communicated to the participants when we sent out the recruitment emails.

The last possible limitation of this study was in term of the absence of money incentives to the participants. There are chances that if we offered money incentives to the participants, we may have higher total number of participants for this study. However, the participants were offered other incentives such as a sense of accomplishment as a public health professional by

sharing their experiences in terms of their observation and participation in learning in their organization. The sense of being a professional was also found to be effective in this study that resulted in 172 responses from public health professionals. Although when we run the analysis for correlation, the sample dropped to 117 due to missing values.

5.3. Recommendations for Practice

This study describes the learning culture and professional development of public health professionals in public health organizations in the State of Georgia. This particular study provides new insight because it illustrates the various types of learning through formal, informal and incidental learning opportunities. This study is significant because the results of this study contributes to the existing literature about the experiences of learning among public health professionals in improving their work performance and fostering their professional development.

Studies provided evidence on how continuous learning foster professional development of professionals (Corvey, 2003; Desikan, 2009; Falk & Drayton, 2009; Gabbay et al., 2003; Ho et al., 2010; Lathlean & May, 2002; Lindsay, 2000; Richardson & Cooper, 2003; Wild et al., 2004). However, despite many learning opportunities that exist in their professional workplaces, research shows that many of these professionals did not attend the activities that can enhance their professional development (Johnson et al., 2005). Various resource constraints and other barriers were identified in the previous studies that may hinder the improvement of job performance as one indicator of professional development of public health professionals.

The instrument used for this study offers public health organizations a guide for the decision maker to observe areas for strategically target change efforts. The result of the study provides opportunities to develop strategic advantages as well as areas of strategic leverage in

developing professional expertise at individual, team/group, and organizational level in the field of public health.

This study also provides descriptions of the learning culture in public health institutions experienced by public health professionals. Although individual and team learning appeared to be a necessary it is not a sufficient prerequisite in creating a learning culture in the organization. Previous studies show that learning culture plays an important role in facilitating the learning of professionals to foster their professional development. The findings from this study help to develop a planned change to create or maintain the learning culture in public health organizations that are most conducive to increase the learning at the individual, group/team, and organizational level. The result of this study may also provide leverage for the organization to create a learning culture that facilitates the learning process for professionals in their daily work. These learning processes may come from a variety of activities described in this study through formal, informal, and incidental learning opportunities. As suggested by the results of this study, the employer of public health professionals should consider creating a high learning culture in the organization at every level to increase participation in formal, informal, and incidental learning opportunities.

5.4. Further Research

Further research is needed to elaborate each item in the formal, informal, and incidental learning opportunities experienced by professionals to be able to provide a deeper understanding about the challenge and facilitating factors to encourage professional learning in the organization. An in-depth interview may be useful to provide more information about the learning culture at individual, team/group and organizational level to support the learning of public health professionals.

5.5. Summary

This study is concerned with the relationship of the dimensions of the learning culture and participation in professional development of public health professionals. The results from this study suggested that the public health professionals in this study have overall a high perception about the learning culture in their organization. The seven dimensions of learning culture seems to be correlated with the participation in informal and incidental learning, but they do not correlated with the participation in formal learning. In regards to participation in professional development activities, the survey asked the participants to identify formal, informal and incidental learning opportunities in their organization. For those who identified the availability of these learning opportunities, many of the participants stated that they also participated in these learning activities. Many of them stated that they also participated in formal learning that offers credits to maintain their professional credentials.

As the public health field welcomes a multi-disciplinary perspective to solve public health issues, many varieties of background and fields of study are possessed by the participants. Although mostly related to the public health field or other health related field, some may possess degree in business, sociology or other fields. The study also suggests that participants have spent a significant amount of time in the field, as public health professionals in this study are older and hold high positions in their organization. Since this overall aim of this study to understand the relationship of the dimensions of the learning culture and participation in professional development of public health professionals, a further research is needed to explore the activities identified in this study to provide leverage for creating a high learning culture in organization to support the professional development of these professionals.

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APPENDIX A:

THE DIMENSIONS OF LEARNING ORGANIZATION QUESTIONNAIRE (DLOQ SHORT)

Dimensions of the Learning Organization Questionnaire

Developed by

Karen E. Watkins and Victoria J. Marsick

Question	**Almost Never**					**Almost Always**
	1	2	3	4	5	6

Individual Level

1. In my organization, people help each other learn.
2. In my organization, people are given time to support learning.
3. In my organization, people are rewarded for learning.
4. In my organization, people give open and honest feedback to each other.
5. In my organization, whenever people state their view, they also ask what others think.
6. In my organization, people spend time building trust with each other.

Team or Group Level

7. In my organization, teams/groups have the freedom to adapt their goals as needed.
8. In my organization, teams/groups revise their thinking as a result of group discussions or information collected.
9. In my organization, teams/groups are confident that the organization will act on their recommendations.

Level

10. My organization creates systems to measure gaps between current and expected performance.
11. My organization makes its lessons learned available to all employees.
12. My organization measures the results of the time and resources spent on training.
13. My organization recognizes people for taking initiative.
14. My organization gives people control over the resources they need to accomplish their work.
15. My organization supports employees who take calculated risks.
16. My organization encourages people to think from a global perspective.
17. My organization works together with the outside community to meet mutual needs.
18. My organization encourages people to get answers from across the organization when solving problems.
19. In my organization, leaders mentor and coach those they lead.
20. In my organization, leaders continually look for opportunities to learn.
21. In my organization, leaders ensure that the organization's actions are consistent with its values.

APPENDIX B:

FORMAL, INFORMAL, AND INCIDENTAL LEARNING QUESTIONNAIRE

FORMAL, INFORMAL, & INCIDENTAL LEARNING OPPORTUNITIES

Karen E. Watkins, Ph.D. (2000, Revised 2013)

		Participation in learning over the last 6 months	
		Check if this option was available at this organization.	*Check if you participated in this activity during this time period.*
	Formal Learning Opportunities		
1.	Seminars or conferences offered in-house		
2.	Seminars or conferences off-site		
3.	Videotapes or webinars on work-related topics available to view		
4.	Web-based courses, desk-top learning, or other computer-based instructional materials available		
5.	Tuition reimbursement to attend formal university courses		
	Informal Learning Opportunities		
6.	A library with professional journals and books		
7.	Membership dues to professional associations or networks		
8.	Formal mentoring from supervisors on professional and career development		
9.	Performance planning—getting performance expectations from supervisors based on organizational goals		
10	Performance planning—getting performance expectations from clients or customers		
11	Performance planning—setting performance objectives for personal development needs		
12	Computerized information bases available to support your work		
13	Job aids, checklists, tools, etc. from peers, supervisor		
14	Structured critiquing sessions on one's work with peers or supervisors		

	Incidental Learning Opportunities		
15	Observing supervisor in the process of performing tasks		
16	Observing peers in the process of performing tasks		
17	Seeing models of "best practice," other finished products		
18	Working with supervisor on joint tasks		
19	Working with peers on joint tasks		
20	Working on new projects, working with new clients		
21	Getting personal performance feedback from supervisors		
22	Getting personal performance feedback from peers		
23	Getting personal performance feedback from clients/customers		
24	Sharing "war stories" or other problematic situations with peers or supervisors		
25	Getting tips on how to complete a task from peers or supervisors		
26	Shadowing or working beside expert job performers		
27	Problem-solving with peers or supervisors		
28	Reviewing errors or unexpected occurrences with peers or supervisors		
29	Reviewing the development or history of task procedures or conditions		
30	Identifying and discussing best practices used in other organizations		
31	Discussing quality improvement suggestions with peers, supervisors		
32	Reviewing significant trends, new laws, and other issues which may affect your work with peers, supervisors		

Findings from research for this checklist can be found in: Watkins, K.& Cervero, R. (2000). Organizations as contexts for learning: A case study in certified public accountancy. *Journal of Workplace Learning*, 12(5), 187-194.See also Marsick, V., & Watkins, K. (1990). *Informal and incidental learning: A new challenge for human resource developers*. London: Routledge; and Marsick, V., Watkins, K., Callahan, M., & Volpe, M. (2009). Informal and incidental learning in the workplace. In M.C. Smith (Ed.). *Handbook of research on adult development and learning.* London: Routledge Press.

APPENDIX C:

ONLINE SURVEY QUESTIONNAIRE

ONLINE SURVEY QUESTIONNAIRE

Part I. Personal Information:

1. What is your age? _____
2. Gender:
   a. Male
   b. Female
   c. Other
3. Institution:
   a. Profit
   b. Non Profit
4. Job title: _____
5. Do you have a public health background?
   a. Yes, _____
   b. No, _____
6. Which is the highest educational degree that you hold?
   a. Less than college or no degree
   b. Associates
   c. Bachelor's
   d. Master's
   e. Ph.D. / DSW, etc. (doctorate, non-medical)
   f. M.D. or other medical degree
7. What field is your highest degree in?_____
8. What is your marital status?
   a. Single
   b. Married
   c. Living with partner
   d. Separated
   e. Divorced
   f. Widowed
9. Are you Hispanic or Latino/a?
   a. Yes
   b. No
10. What is your race/ethnicity?
    a. White or Caucasian
    b. Asian
    c. Black or African American
    d. American Indian or Alaskan Native
    e. Native Hawaiian or other Pacific Islander
    f. Multi-racial
11. Do you hold a professional credential/certification?
    a. Yes, _____
    b. No (Skip 12 and 13)
12. What is the organizational body that granted you this professional certification? _____

13. Do you participate in continuing education activities that offer credit in order to maintain your professional credential/certification?
    a. Yes, from what activities?_____
    b. No

Part II. Formal, Informal, & Incidental Learning Opportunities in Public Health

		Participation in learning over the last 6 months	
		Check if this option was available at this organization.	*Check if you participated in this activity during this time period.*
	Formal Learning Opportunities		
1.	Seminars or conferences offered in-house		
2.	Seminars or conferences off-site		
3.	Videotapes or webinars on work-related topics available to view		
4.	Web-based courses, desk-top learning, or other computer-based instructional materials available		
5.	Tuition reimbursement to attend formal university courses		
	Informal Learning Opportunities		
6.	A library with professional journals and books		
7.	Membership dues to professional associations or networks		
8.	Formal mentoring from supervisors on professional and career development		
9.	Performance planning—getting performance expectations from supervisors based on organizational goals		
10	Performance planning—getting performance expectations from clients or customers		
11	Performance planning—setting performance objectives for personal development needs		
12	Computerized information bases available to support your work		
13	Job aids, checklists, tools, etc. from peers, supervisor		
14	Structured critiquing sessions on one's work with peers or supervisors		
	Incidental Learning Opportunities		
15	Observing supervisor in the process of performing		

	tasks		
16	Observing peers in the process of performing tasks		
17	Seeing models of "best practice," other finished products		
18	Working with supervisor on joint tasks		
19	Working with peers on joint tasks		
20	Working on new projects, working with new clients		
21	Getting personal performance feedback from supervisors		
22	Getting personal performance feedback from peers		
23	Getting personal performance feedback from clients/customers		
24	Sharing "war stories" or other problematic situations with peers or supervisors		
25	Getting tips on how to complete a task from peers or supervisors		
26	Shadowing or working beside expert job performers		
27	Problem-solving with peers or supervisors		
28	Reviewing errors or unexpected occurrences with peers or supervisors		
29	Reviewing the development or history of task procedures or conditions		
30	Identifying and discussing best practices used in other organizations		
31	Discussing quality improvement suggestions with peers, supervisors		
32	Reviewing significant trends, new laws, and other issues which may affect your work with peers, supervisors		

Part III. Dimensions of the Learning Organization

Question		Almost Never (1) - Almost Always (6)					
		1	2	3	4	5	6
	In my organization, leaders continually look for opportunities to learn						
	Individual Level						
1	In my organization, people help each other learn.						
2	In my organization, people are given time to support learning.						
3	In my organization, people are rewarded for learning.						
4	In my organization, people give open and honest						

	feedback to each other.						
5	In my organization, whenever people state their view, they also ask what others think.						
6	In my organization, people spend time building trust with each other.						
Team or Group Level							
1	In my organization, teams/groups have the freedom to adapt their goals as needed.						
2	In my organization, teams/groups revise their thinking as a result of group discussions or information collected.						
3	In my organization, teams/groups are confident that the organization will act on their recommendations.						
Organization Level							
1	My organization creates systems to measure gaps between current and expected performance.						
2	My organization makes its lessons learned available to all employees.						
3	My organization measures the results of the time and resources spent on training.						
4	My organization recognizes people for taking initiative.						
5	My organization gives people control over the resources they need to accomplish their work.						
6	My organization supports employees who take calculated risks.						
7	My organization encourages people to think from a global perspective.						
8	My organization works together with the outside community to meet mutual needs.						
9	My organization encourages people to get answers from across the organization when solving problems.						
10	In my organization, leaders mentor and coach those they lead.						
11	In my organization, leaders continually look for opportunities to learn.						
12	In my organization, leaders ensure that the organization's actions are consistent with its values.						

Part IV. Professional development of public health professionals

1. In your perception, what learning experiences most positively contribute to the improvement of your job performance?

_____

_____

2. Are you currently part of an informal learning group?

a. Yes (Continue to number 3)
b. No (Skip number 3)

3. Which type of learning do you prefer most?
   a. learning provided by informal group (Continue to number 4)
   b. learning provided by formal professional association (Continue to number 5)
4. Why do you prefer learning provided by your informal group?
5. Why do you prefer learning provided by your formal professional association?

APPENDIX D:

RECRUITMENT EMAIL AND CONSENT

Recruitment email

Doctoral Study on Professional Development at University of Georgia

Dear Participants:

I am a doctoral student under the direction of professor Jessica L. Muilenburg, in the Department of Health Promotion and Behavior at The University of Georgia. I invite you to participate in a research study entitled "The Role of the Learning Culture and Participation in Professional Development of Public Health Professionals." The purpose of this study is to understand the role of the learning culture and participation in professional development of public health professional.

Your participation will involve answering the questions in the online survey and should only take about 10-15 minutes. Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. If you decide to stop or withdraw from the study, the information/data collected from or about you up to the point of your withdrawal will be kept as part of the study and may continue to be analyzed.

The data in the online survey will be collected confidentially. Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However, once the materials are received by the researcher, standard confidentiality procedures will be employed. The project's research records may be reviewed by departments at the University of Georgia responsible for regulatory and research oversight. The results of the research study may be published, but your name or any identifying information will not be used. In fact, the published results will be presented in summary form only.

The findings from this project may provide information on participants' experiences as professionals and could make a significant contributions to the existing literature about professional development of public health practitioners through formal, informal and incidental learning. There are no known risks or discomforts associated with this research.

By completing the online survey, you are agreeing to participate in the above described research project. Please click the following link or copy and paste this link to your browser to begin the online survey:

https://ugeorgia.qualtrics.com/SE/?SID=SV_81UpINsVxOqp4bj

If you have any questions about this research project, please feel free to call me Ira Nurmala at (706) 542-4365 or send an e-mail to ira@uga.edu or to jlm@uga.edu. Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, 629 Boyd GSRC, Athens, Georgia 30602; telephone (706) 542-3199; email address irb@uga.edu.

Thank you for your consideration! Please keep this letter for your records.

Sincerely,

Ira Nurmala