Introduction
Over the past decade the University of Maryland at Baltimore (UMB) and the University of Maryland School of Nursing (UMSON) have been engaged in a multi-stage process of exploring new ideas for global health education which has led to implementing organizational processes and structures to support a series of innovative educational programs. Creating global health educational opportunities for our students at UMB was a collective effort, initiated and led by an interprofessional group of faculty. In 2004, when this process began with the formation of the global health concentration of UMB’s new MPH program, there was no formal global health educational program at UMB. While UMB’s School of Medicine had impressive strengths in global health research and service delivery at that time, not a single general introductory course on global health was available to students from the UMB Schools of Nursing, Medicine, Dentistry, Pharmacy, Law, and Social Work. In this paper we will try to reconstruct the process of organizational learning that led to the development of our global health educational capacity by utilizing an implementation research framework in addition to several key concepts drawn from the organizational and managerial sciences literature. Our emphasis will not be on interprofessional global health student competencies per se, but rather on the organizational capabilities we had to develop as an institution to be able to foster competencies in our students.

Capacity development has been a fundamental building block of global health and human development programs for the past three decades. While there is increasing attention given to the importance of strengthening the capacity of health systems and institutions — particularly in low- and middle-income countries, much of what is considered capacity building continues to focus primarily on increasing individual capacity through training and education. The organizational capabilities necessary for providing...
sustainable competency development are often not addressed. In higher income countries, university-based global health programs have expanded rapidly with an approximate tripling of educational programs in North America every five years since 2000. Massive student demand has contributed to this growth which has focused on the education, training, and mentorship of individual students. This rapid growth has driven the discussion of global health competencies. There is much convergence across these global health competency initiatives which specify an impressive array of interdisciplinary and interprofessional sets of moral, intellectual, scientific, and process competences.

What is largely ignored in this discussion are the changes in organizational structure and process that have enabled universities to develop the necessary organizational capabilities and the overall institutional capacity to teach global health competencies to their students. This is not just a matter of revising a syllabus or offering a few new courses or repackaging old ones. We need to ask ourselves how we can effectively teach such wide-ranging domains of competencies given the organizational structure of our modern universities where education and research activities continue to exist in silos defined by the reward structure of individual departments and professions. While there are notable examples of universities that have created innovative organizational structures to address these challenges, asymmetries continue to exist between highly-resourced universities with a strong legacy in global health and the majority of universities whose educational programs in global health are less than a decade old. These organizational and institutional challenges are even more evident within the realm of the global health interprofessional competency domain which focuses on the development of interprofessional team competencies where the epistemic world view of no single profession can be considered privileged over another. Addressing this concern requires new forms of organization within universities that aim to be truly interprofessional. These challenges require universities to undertake a process of organizational learning, experimenting with new educational strategies, structures and processes, and developing those unique organizational capabilities that are most appropriate for their particular context.

**Organizational Capabilities and Learning**

Organizational and management science has developed a theoretical framework for the study of how organizations such as corporations, government entities, and universities develop organizational capabilities by incorporating new ideas and innovations. An organization’s overall capacity is a reflection of its organizational capabilities. For example, the organizational capability to adapt to changes in environmental circumstances through organizational learning is a critical aspect of an organization’s overall capacity.

Organizational capabilities can mature over time and some types of capabilities (e.g., learning capability) are the foundation upon which other types of capabilities can emerge. Organizational capabilities can be thought of as both tangible (physical assets) and intangible resources (organizational culture, learning capability, teamwork, trust, experience) as well as the capability to deploy these resources and to acquire additional external resources when needed.

Organizational learning is the process of achieving organizational change and strategic renewal through a cyclical pattern of reaching out to explore new ideas while at the same time implementing more familiar ideas that have become accepted by individuals and groups within the organization. Through this process the organization is able to explore new capabilities while consolidating recently acquired capabilities. There are four stages defined in the theory of organizational learning: intuiting, interpreting, integrating, and institutionalizing. Individuals are the key agency in the initial exploration stage because it is individuals, not organizations, who are able to identify and initiate new ideas and share and interpret them with others in the organization. Small groups are important in the early implementation stage by interpreting and integrating new ideas and making sense of them by actually putting them into practice.

Working together in groups involves a natural integrating process: developing shared understandings can lead to collective actions, which in turn can influence others in the organization, including leadership. The organization as a whole and its leadership need to be involved if the new idea or innovation is to be fully implemented in the final stage of institutionalization at the organizational level. Institutionalizing involves transforming an idea into a structured process with systems and procedures in place to ensure that specific actions occur on a routine basis. For innovations to become sustainable, the learning that has occurred among individuals and groups within the organization must be embedded into the regular practice of the organization as a whole.

**Organizational Learning at UMB**

A critical question with regard to organizational learning is whether these processes can be employed prospectively or whether they are inevitably analyzed retrospectively with the benefit of 20/20 vision in hindsight. One goal of this essay is to provide a frame-
work for universities to consider as they develop or refine global health programming. Had we been aware of these stages of organizational learning 10 years ago we may have proceeded with a great deal more confidence! At the time, however, it seemed quite lonely to be among the few individuals advocating for global health education at UMB and UMSON. As the organizational learning theory suggests, this process began with key individuals in various schools who had been involved in global health education, research, and practice at other universities or United States government agencies.

The breakthrough at UMB occurred when a small number of these individuals collaborated to apply for a “Framework Program for Global Health” grant from the National Institutes of Health (NIH) Fogarty International Center which was awarded in 2005. The initial small group expanded to include other individuals from each of the six professional schools on our campus and eventually became formalized as the Global Health Interprofessional Council (GHIC). As suggested by organizational learning theory, most of the ideas for interprofessional global health education eventually implemented at UMB were discussed first and worked through in this small group before being shared with other schools or the university administration. Over the past eight years, GHIC has advocated effectively for interprofessional global health education within our university system and in so doing has led UMB into the institutionalization stage. The President of UMB and many of the deans of its professional schools have become committed to expanding global health educational opportunities for students. The UMB Strategic Plan identified global health education as an important goal in 2013. More recently, a Student Center for Global Education and a Center for Global Education Initiatives have been created by the university. GHIC has organized and funded interprofessional student and faculty global health immersion experiences in Malawi for the past four years, and this year is embarking on another model of interprofessional immersion that has funded over 40 students and faculty to engage in 14 activities throughout Africa and Asia.

To successfully accomplish the institutionalization of this interprofessional global health opportunity structure, it was necessary for GHIC (and UMB) to acquire specific organizational capabilities. In the beginning one key capability included the capacity to form relationships across professions based on principles of equality, reciprocity, and trust. It is notable that there was a conscious effort on the part of the members of the GHIC to avoid having any single profession or school dominate the vision or leadership of the organization. Another key capability, predicted by organizational learning theory, involved mobilizing other members of the global health community on campus and eliciting and synthesizing their combined views into a set of goals and a plan of action which was then effectively communicated to the deans of the professional schools and the university president. Interestingly, the specific organizational capabilities necessary to develop an effective voice for the creation of sustainable interprofessional global health governance and infrastructure at the university level are similar to the competencies required of individuals who develop civil society organizations, social movements, and non-governmental organizations that play such important roles in global health internationally. The organizational learning process at UMSON occurred concurrently with that in the larger university. This led to a process of cross-fertilization, where the successful implementation of organizational innovations at one level provided the context for change at another level.
Developing Global Health Capacity at UMSON: An Implementation Research Perspective

As noted above, UMSON had no global health educational program in 2005. There has been remarkable change over the past decade and now, in 2014, UMSON has an Office of Global Health which coordinates an educational program that includes global health courses, a post-masters global health certificate program, a number of strong educational partnerships around the world, and a program of funded interventions that focus on strengthening nursing capacity in resource limited settings through innovative educational strategies. We have also experienced the organizational learning cycle of developing global health educational capabilities that was described for the university. Key individuals initially explored and interpreted global health possibilities, which were taken up by groups of faculty and students, and eventually implemented at the organizational level. This organizational learning cycle has been repeated again and again as we have adopted new innovations that subsequently become part of our organizational capabilities and routine practice.

To describe the development of global health capacity at UMSON, below is set forth an implementation research framework that illustrates the importance of context in this process.

Figure 1 depicts our application of the Consolidated Framework for Implementation Research (CFIR) to the process of building global health educational capacity at UMSON. The CFIR model is a meta-theoretical framework that integrates concepts from a number of existing theories of implementation research into an overarching taxonomy of broad constructs. Researchers have used these constructs to make sense of their situation and to reflect back on what they have done — just as we are doing in this paper by using CFIR as a heuristic device for reconstructing the narrative of our own global health capacity development.

1. Context: The Inner and Outer Setting of the Intervention

The overall context and specific settings are critical aspects of any implementation. Context can be understood as the set of broad determinants as well as the specific circumstances that surround a particular

intervention. The CFIR model in Figure 1 identifies two distinct types of contextual settings. The Outer Setting consists of the global, societal, and institutional environment in which the organization exists. It may also include cognitive and ideological influences, as well such as scientific knowledge and conceptual frameworks. The Inner Setting consists of attributes of the organization that influence the implementation process, such as readiness, culture, social networks, and organizational capabilities.

a. Outer Setting: Global, Societal, and Institutional Influences
The following is a list of “outer setting” contextual factors that influenced the global health implementation process:

1. Growing health inequities within and between countries.
2. New conceptual frameworks: WHO Social Determinants of Health Model.26
3. Renewal of horizontal strategies: WHO Primary Health Care Model.27
4. Rapid increase of global health educational programs in the U.S.28
5. Call by nursing leadership at global and national levels for the inclusion of global health and social justice into educational programs for nurses.29
6. Increased U.S. Government funding for global health: President’s Emergency Program for AIDS Relief (PEPFAR) and NIH Fogarty Framework Grants.
7. President Obama's Global Health Initiative puts greater emphasis on health systems strengthening.30
8. University Consortium for Human Resources for Health is developed by the Rwandan Ministry of Health and the Clinton Healthcare Access Initiative.31

These factors established a context which led to the rapid growth of global health education. Globally and domestically there was an increasing awareness of health inequities and a greater understanding of the causal impact of the social and global determinants of health. The listed factors reveal a growing awareness and willingness on the part of the U.S. government to fund global health initiatives and a concurrent effort on the part of nursing educators to incorporate global health concerns within the curriculum for nursing students. The “outer setting” was an expansive and positive environment for global health educational innovations to emerge and develop.

b. Inner Setting: University and School Global Health Resources and Capabilities
The following is a list of “inner setting” contextual factors and institutions that influenced the global health implementation process:

1. Institute for Human Virology at the University of Maryland School of Medicine (UMSOM).
2. Center for Vaccine Development at UMSOM.
3. UMB Global Health Interprofessional Council (GHIC).
4. Interprofessional MPH program at UMSOM.
5. Strong Community Health and Public Health Nursing programs at UMSON.
6. UMSON’s strong undergraduate and graduate programs and research capacity.

At the university level, the Institute for Human Virology and the Center for Vaccine Development had “boots on the ground” in many countries and were open to collaborating with the nursing school on issues of common concern. GHIC (described above) was developing more and more support for global health education at the university level. UMSON faculty members were teaching global and public health courses within the university-wide MPH program. UMSOM had considerable academic strengths in public health. There was interest and support for a global health educational program at UMSON — particularly in the Department of Family and Community Health. Finally UMSON was one of the largest and academically strongest schools in the U.S. with both depth and breadth of expertise in primary and critical care as well as in bio-behavioral, health systems, and outcomes research. All of these organizational capabilities were to have a positive impact on UMSON’s global health program over the course of its initial formation and continued development.

2. Individuals Involved: Global Health Actors and Supportive Leadership
The following is a list of the individuals and groups that influenced the development of global health capacity at UMSON:

1. Active group of committed nursing students.
2. Active group of committed UMSON faculty.
3. Active support from the Dean of UMSON.
4. Support from the UMB President.
5. Supportive leadership from UMB’s Institute for Human Virology.
According to the CFIR Model (Figure 1), individuals are considered to be the active agents that influence the success or failure of the implementation of any intervention. Individuals can serve as champions and advocates of specific organizational changes and often remake interventions based on their own expectations and experiences. As organizational learning theory suggests, individuals often work in small groups to initiate, interpret, and integrate organizational changes within the organization. A small core group of committed nursing students and faculty organized Nurses for Global Health in 2006. This group was able to successfully pressure an already receptive faculty and administration to provide global health educational opportunities. More distal leadership, of UMB’s large global health research institutes and the UMB administration, was also supportive at certain critical junctures.

3. Process for Implementation: Developing Organizational Capabilities in Global Health

The implementation process requires active change that is led or influenced by the individuals and groups in the inner and outer setting. Those individuals and entities at UMB propelled the following initiatives that have resulted in UMSON’s robust global health program:

1. Formation of Nurses for Global Health.
2. Strategic planning for UMSON global health capacity.
4. Intra-university partnership with UMSON’s Institute of Human Virology.
5. Partnerships with sister schools of nursing.
6. Partnerships with non-governmental organizations (NGOs) and Ministries of Health (MOHs).
7. Funding from U.S. government for global health educational programs.

As noted earlier, the student-led Nurses for Global Health (NGH) has worked to bring global health issues to the attention of the student body and the faculty through frequent educational events and a large annual conference open to the entire University. The focus of NGH has been to raise awareness of global health issues and urge UMSON administrators to turn awareness into practice through more opportunities to work and study abroad, more global health courses, and to have the issues of global health threaded throughout their curriculum. Much of this has been accomplished over the past six years, with the Global Health Certificate Program — which was envisioned and created in collaboration with the leadership of NGH — being the most visible example.

The presence of both external and internal faculty and student mobilization helped to place the development of global health organizational capacity on our school’s five year strategic plan in 2007. Part of this strategic plan called for combining all international activities of the school into one entity which became the Office of Global Health (OGH) — formally opened in 2009.

Intervention: Programs and Partnerships for Global Health Education

Developing an Interprofessional Global Health Course

UMB faculty members created the campus’s first interprofessional global health course — “Critical Issues in Global Health” — in 2005, open to students from all UMB professional schools. The course is now taught in the School of Nursing by the director of the OGH together with faculty members from most of UMB’s professional schools. In the class students are placed into interprofessional teams that take on a number of assignments that focus on global health issues within a specific WHO geographical region. One of the purposes of the group work is to get students from different professions to solve problems with students from other professions who have markedly different perspectives and competencies than their own. Interprofessional teams of students are asked to tackle problems that require a “big picture” perspective that no one profession or discipline alone has the answers to, such as: “What is the impact of economic globalization on the population health of the region of the world to which you have been assigned?” The student teams are asked to apply the social determinants of health framework developed by the WHO Commission on the Social Determinants of Health to address the complex causal pathways that lead from social, political, and economic structures through intermediary determinants to specific health outcomes. Most students find this assignment to be the most challenging yet most rewarding learning experience in the course. Over the past few years the WHO social determinants framework has provided an architecture for the course as a whole, which was previously fragmented into important but disconnected topical areas and lacking an overarching conceptual framework. Our experience teaching this course suggests that the capacity to understand and apply the social determinants of health framework in a global context is an essential interprofessional global health competency that is not currently being taught consistently within any of the health professions except public health. It provides the interprofessional global health student
with an essential set of conceptual tools that are necessary to understand both the causes and potential solutions to global health challenges.

The Global Health Certificate Program
Six years ago we recognized the need to combine didactic learning experiences such as the course discussed above with practical, on the ground, global health field placement experiences in resource limited countries and urban settings. UMB’s Global Health Certificate Program based in UMSON was designed to address this need and to prepare students from all professional schools on campus to pursue global health careers. The 12-credit program has been approved by the Maryland Higher Education Commission and has graduated nearly thirty students with the majority being community/public health nurses, but increasingly social workers and medical students as well. Students receive a strong didactic training in global health, social justice and the social determinants of health, as well as program planning and evaluation. Students must also complete a field experience in a low-resourced setting. Students are generally placed in teams of two or three in countries where we have established strong partnerships around specific programmatic areas, for example, health systems strengthening in the treatment and care of HIV/AIDS. We work with our in-country partners to identify specific projects that our student teams can complete in six weeks and which will add real value to the health programs of our partners. These partners may be a sister school of nursing, a local university or hospital, a local NGO, or a program in the MOH. (See Figure 2 for a list of our service learning projects and partnerships.)

Many of the student field experiences have involved implementation research oriented program and process evaluations. Frequently this is something that our in-country partners have not been able to successfully undertake and the students’ evaluation often adds considerable insight and allows for mid-course corrections in the implementation of a program. One example of a field experience is our partnership with the UMSOM Institute of Human Virology-Nigeria that involved three successive years of evaluation of one of the first major task shifting efforts in HIV/AIDS care in Nigeria involving a large teaching hospital in the capital city of Abuja. Task shifting is a strategy developed by the WHO and other organizations to increase the capacity of health professionals to provide care.

Figure 2

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<tr>
<th>Field Projects and Sites</th>
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<tr>
<td><strong>NIGERIA:</strong> Research and Quality Improvement on Nursing Workforce Issues in HIV Care and Universal Precautions</td>
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<td><strong>LIBERIA:</strong> Assessment of Primary Health Care</td>
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<td><strong>KENYA:</strong> Traditional Birth Attendant Study</td>
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<td><strong>MALAWI:</strong> Maternal Health Services Survey and Participatory Action Community Assessment</td>
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<td><strong>ZAMBIA:</strong> Assessment of Community Health Workers in Rural HIV Clinics &amp; USAID Africa Bureau Internship</td>
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<td><strong>HAITI:</strong> Program Evaluation of Infectious Disease Certificate Training for Nurses</td>
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<td><strong>U.S.:</strong> Obstetric Care for Refugee Women in Baltimore, MD</td>
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**UMSON-OGH’s partnerships with seven key GH institutions have successfully created diverse field projects in seven different countries.**
One important component of the field experience is a focus on the team and interprofessional skills required in global health practice. Certificate students on the ground also learn something about the nature of global health practice: it is demanding and requires self-discipline, flexibility, and considerable self and cultural awareness. Field work also requires an understanding of the importance of working as a member of the team and subordinating one’s own personal interests to the goals of the team, the needs of the in-country partner, and the requirements of the partnership. These “soft” relational competencies are not dissimilar to those involved in working in interprofessional health care teams. The context, however, is vastly different in global health for it involves working in a different cultural setting where everything is new and potentially challenging. In addition to creating country-specific cultural competencies, we also work with each individual and each team to address personal vulnerabilities that might affect a student’s performance on the ground. Even so, we have had several instances where individual students have failed to engage with other team members to meet the goals of the project and have become withdrawn and resistant to fully participating in the efforts of the team. This kind of behavior can be very destructive to the functioning of the team as a whole — particularly in a demanding and stressful setting such as Africa. The team related competencies of individuals are a critical aspect of the “soft” skills that may determine the success or failure of a program or project.

**Conclusion**

This paper has reviewed an interprofessional organizational learning process which has resulted in the successful institutionalization of global health educational opportunities for students at UMB and UMSON. UMB students from all professional schools are now more able to develop global health competencies both in the classroom and in resource-limited settings abroad — though much remains to be done. Over the last decade the capability to initiate, build, and sustain interprofessional partnerships across schools has been critically important.
on respect and trust between collaborators. Historic asymmetries in power and prestige continue to exist between professional groups and between educational institutions of the global North and South. These power differentials can be detrimental to the formation of trust and effective partnerships both at home and abroad. Yet, change is possible. For example, our University’s Schools of Nursing, Dentistry and Medicine are currently involved in the largest health care systems strengthening program ever funded by the U.S. Government. The Rwandan Human Resources for Health Initiative is a partnership designed to improve the educational capabilities of Rwandan schools of nursing, medicine and dentistry so that they may educate their own health professionals to the highest standards. In contrast to North-South collaborations in the past, this eight-year effort has been conceptualized and is being led by the Rwandan Government’s Ministries of Health and Education. In a similar vein, UMB’s interprofessional global health faculty have sought — with considerable effort — to find “a place for all at the global health table.”

References
2. Id. (Rowthorn).
7. See Capacity-Collective, supra note 5.
8. Id.
10. Id. (Matheson et al.).
16. See Amit and Schoemaker, supra note 4.
17. See Crossan et al., supra note 4.
18. Id.
19. Id.
20. Id.; see Paulk et al., supra note 15.
22. See Rowthorn, supra note 1.
23. See Peters et al., supra note 3; Damschroder, supra note 3; de Savigny and T. Adam, supra note 6.
24. Id. (Peters and Damschroder).


32. See Damschroder, supra note 3.

33. See supra note 26.


35. See Riel et al., supra note 1.


38. See Riel, supra note 1; id.


40. Id.


42. Id. (Capacity-Collective).

43. See Binagwaho et al., supra note 31.

44. Id.

45. See Rowthorn, supra note 2.