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Original Article

# Health professions educators as agents of change in Tanzania: Creativity to implement new curricula

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**Abstract** Muhimbili University of Health and Allied Sciences (MUHAS) strives to instill in its graduates skills and competencies appropriate to serving the Tanzanian population well. MUHAS leadership, working in collaboration with educators from the University of California San Francisco (UCSF), selected and trained an interdisciplinary group of faculty members to promote effective teaching. We describe the development of this group of faculty change agents – now known as the Health Professions Educators Group (HPEG). The HPEG invigorated the education environment at MUHAS by: engaging many colleagues in special training events that introduced new methods for teaching and assessment; encouraging innovation; and developing strong mentoring relationships. HPEG members piloted courses in education to prepare all postgraduate students as peer educators, teaching assistants, and as candidates for faculty future appointments. Creation of a ‘teaching commons’ reinforces the new focus on innovative teaching as faculty members share experiences and gain recognition for their contributions to quality education.

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## Introduction

Health professional graduates starting their employment in rural Tanzania face overwhelming challenges due to: (i) the large populations they serve;<sup>1</sup> (ii) the high disease burdens in these populations, including rising prevalence of non-communicable diseases like cancers and heart diseases, continued high incidence of infectious diseases such as HIV/AIDS, malaria, and tuberculosis, and high maternal, neonatal, and child mortality;<sup>2</sup> and (iii) the absence of supportive working environments that lack utilities, facilities, and supplies, and experienced colleagues who can provide advice.<sup>3,4</sup> Education must prepare these young professionals to implement what they have learned, to locate advice and information, to manage and educate other staff, and to interact with clients and colleagues professionally and with respect.

In 2008, Muhimbili University of Health and Allied Sciences (MUHAS) set out to revise its knowledge-based health professions curricula to ensure that its graduates have the competencies to respond skillfully to the difficult circumstances under which they will work.<sup>5</sup> Through a partnership formed in 2005 with the University of California San Francisco (UCSF),<sup>6,7</sup> MUHAS explored and developed strategies to promote teaching methods most suited to the success of the new curricula and to build faculty skilled in those teaching methods to enhance learning.<sup>8</sup>

We describe the development of a group of junior faculty as change agents – who would become known as the Health Professions Educators Group (HPEG) – and how they engaged other faculty and postgraduate students in becoming better educators capable of developing highly skilled health-care professionals for Tanzania. We reflect on the lessons we learned and suggest ways for sustaining the changed educational environment at MUHAS created by the HPEG. We anticipate that our experience will be useful to administrators and teachers at other health professions institutions, particularly those in under-resourced settings who may be dealing with faculty shortages but wanting to introduce new teaching methods.

## Need to Enhance the Educational Environment at MUHAS

MUHAS gained its charter as a public university of health sciences in 2007, previously having been a college of the University of Dar es Salaam. About 300 faculty work in MUHAS's schools of dentistry,



medicine, nursing, pharmacy, and public health, and its institutes of traditional medicine, and allied health sciences. Rapid increases in student enrollment (from 400 students in 1995 to 2422 in 2011) and in academic programs (from 28 programs in 1995 to 78 in 2011) with no commensurate increases in faculty numbers mean MUHAS faculty carry heavy teaching loads.

As it revised curricula,<sup>5,9</sup> MUHAS leadership wanted to address a fundamental problem: students attending crowded lectures or demonstrations in which they have little possibility of interacting with each other or with faculty. Leadership believed that a healthy learning environment would address this situation. They also wanted to optimize academic expertise by developing administrative structures to encourage interprofessional activities. In collaboration with UCSF, MUHAS obtained a grant from the Bill & Melinda Gates Foundation to support educational innovation at MUHAS and its planned curricular change (2008 to 2011).<sup>7</sup>

Although MUHAS faculty are experts in their professional fields, very few had formal training in education and many lacked the skills necessary to teach and assess new curricula designed to enhance performance of graduates in their first jobs. When starting to revise curricula in early 2009, some faculty expressed the need for individualized mentoring by experienced teachers and opportunities for training to further their teaching and assessment skills.<sup>8</sup> Faculty also suggested that MUHAS encourage its administrators to support existing and newly appointed faculty in developing skills as educators to address the teaching challenges they face.<sup>8</sup>

## **Developing Change Agents to Build a Critical Mass of Educators at MUHAS: The HPEG**

MUHAS's vision is that faculty change agents will contribute to transforming its educational environment, raising the engagement of faculty and students in teaching and learning. In early 2010, constrained by a short institutional timeline to complete curricular revision, MUHAS leadership, in collaboration with UCSF educators, created an accelerated short-term plan to:

- (1) create a critical mass of faculty with enough knowledge and commitment to education to serve as change agents within the institution;

- (2) enable these change agents to: design and facilitate workshops for their faculty colleagues; expand the number of MUHAS faculty able to incorporate new approaches and materials in their teaching; and develop strong mentoring relationships with other faculty and students; and
- (3) design courses in education for all postgraduate students to engage them as peer educators and possibly future faculty, as well as preparing them to become good teachers in their professional roles.

### **Selection of faculty educator change agents**

MUHAS leadership identified as change agents junior faculty who showed: (i) a strong interest in teaching; (ii) potential for leadership; and (iii) willingness to dedicate already strained time in developing their own proficiency as educators (through training) and to shoulder additional responsibility to train colleagues. In selecting candidates, MUHAS leadership ensured representation from across its schools and institutes. The initially selected nine faculty came from clinical disciplines: four women and five men, ranging in age from 30 to 45 years made up the group; one each from the schools of nursing, pharmacy, dentistry, and public health, and five from the school of medicine. The most senior member in academic rank was a senior lecturer (no assistant, associate, or full professors) and the rest were lecturers in their first academic appointment at MUHAS; some were department chairs.

The selected educators expected to: (i) improve their own teaching skills and acquire new teaching methods; (ii) improve communication skills to effectively impart what they know to others; (iii) form collegial relationships both with colleagues and students; (iv) develop collaborative relationships with colleagues to enhance education; (v) gain insight into curricular design and assessment methods; and (vi) learn to teach in an interdisciplinary manner. Importantly, to lead and mentor this group, MUHAS selected a senior faculty member (Author CM), a full professor in the school of medicine, who had trained in educational leadership at the Foundation for Advancement of International Medical Education and Research (FAIMER) Institute – a 2-year program that provides participants with education methods, management and leadership skills and an international network.<sup>10</sup> This senior professor advised the UCSF



team, mentored the change agents through specially organized training at MUHAS and UCSF, and supported them in the development and delivery of their own education training sessions for MUHAS colleagues.

### **Preparation of the faculty educators at MUHAS**

In June 2010, facilitators from UCSF (led by Author PO'S) worked intensively with the nine change-agents onsite in Tanzania over a 2-week period (Table 1 provides details of the training program). First, the UCSF team led the MUHAS group through the very course they would later offer to postgraduate students. The course covered learning theories, curriculum development, instructional and assessment strategies, and program evaluation methods. Second, the MUHAS group practiced delivering the 3-hour faculty development workshops that they would be offering to fellow faculty, addressing the training needs their colleagues previously had identified.<sup>8</sup> The seven workshops that formed the basis of both the postgraduate course and the faculty development sessions covered: writing competency-based objectives; large- and small-group teaching; clinical teaching; test item writing; test reliability and validity; and mentoring. Practice sessions allowed the MUHAS leader for each workshop to adapt the initial UCSF workshop to fit needs at MUHAS. In summary, this program laid the foundations for the HPEG to come together as a cooperative group to advance the MUHAS educational mission.

### **Preparation of the faculty educators at UCSF**

The MUHAS group visited UCSF for 2 weeks in September 2010 to observe and try out a variety of teaching and assessment strategies that UCSF faculty use in competency-based education (Table 2 provides details of the training activities). The team explored opportunities for teaching and research collaborations with UCSF colleagues in and across their respective disciplines, and began developing educational research and leadership skills. The educators visited research laboratories, clinical sites, and simulation centers and observed small- and large-group teaching, problem-based learning activities, student journal club presentations, a dissection laboratory session, and both inpatient and outpatient clinical teaching.

At UCSF, the MUHAS group also participated in workshops that had been organized for UCSF faculty to advance understanding of teaching

**Table 1:** Overview of HPEG training program at MUHAS (June 2010)

*Orientation*

Goal-setting exercise, ensure commitment to tasks set by program

*Introduction to educational principles*

Each session had a lesson plan with objectives, prerequisites and reading assignments, an outline of activities, accompanying handouts and sets of classroom materials, PowerPoint presentations, and homework assignments.

Pedagogy

- Introduction to learning theory
- Large-group teaching
- Introduction to technology
- Small-group teaching
- Team-based learning
- Clinical teaching
- Laboratory and skills teaching

Assessment and feedback

- Feedback and remediation
- Reliability and validity in designing good assessments
- Types of assessment
- Performance assessment
- Teaching outside the classroom
- Scoring, grading, and item analysis

Curriculum development

- Problem identification and needs assessment
- Goals and objectives
- Choosing teaching strategies
- Implementation and resources
- Programme evaluation

*Workshop practice*

Practice conducting three-hour workshops

The workshops covered

- Writing multiple-choice questions
- Mentoring skills for use with faculty and learners
- Large-group teaching
- Clinical teaching
- Writing objectives for curricula
- Each workshop included a PowerPoint presentation, handouts, classroom materials, and evaluation forms.

*Wrap-up*

Review the training program and any identified issues; plan the tasks and activities for the coming year; identify further training needs.

methods, including how to establish learning environments for effective clinical teaching and how to use high- and low-fidelity simulators for medical emergency procedures such as intubation. The team spent time

**Table 2:** HPEG training activities at UCSF (September 2010)

Teaching	<p><i>Large-group teaching:</i> Observed and evaluated teaching, including strategies to increase student engagement (audience response system) and facilitate early clinical experiences (patient interview)</p> <p><i>Small-group teaching:</i> Observed and evaluated facilitation by leaders and group dynamics, team work and communication among learners in: case discussions, journal clubs, and student-led, problem-based learning sessions</p> <p><i>Laboratory teaching:</i> Observed and evaluated peer teaching in laboratories</p> <p><i>Clinical teaching:</i> Observed teaching in both inpatient (morning report and team ward rounds) and outpatient settings (pre-clinic conference and interdisciplinary chronic care outpatient clinic) and in a student-run homeless clinic</p>
Scholarship	<p><i>Education seminar:</i> Participated in a weekly works-in-progress conference held at UCSF for students and faculty to receive advice on curricular or educational research projects, drafts of abstracts and manuscripts, and to practice conference presentations</p> <p><i>Manuscript writing:</i> Developed education research projects with support from UCSF faculty members</p> <p><i>Faculty development:</i> Participated in faculty development sessions on clinical teaching, simulation, and online course support</p> <p><i>Curricula ambassadors program:</i> Introduced to this program which allows UCSF students to develop skills in education by working with faculty on an education project needed in the curriculum</p>
Leadership	<p><i>'White coat' ceremony:</i> Observed a white coat ceremony for entering students, emphasizing development of a professional identity</p> <p><i>Assessing continuing education needs:</i> Met with the associate dean for graduate and continuing medical education to discuss ways to develop a continuing education program at MUHAS</p> <p><i>Report writing:</i> Participants jointly wrote a report summarizing their learning from this visit and their recommendations to MUHAS leadership</p>

planning research projects to assess and evaluate faculty development and postgraduate teaching at MUHAS. They agreed to judge student posters in curricular innovations alongside UCSF faculty at an event UCSF was holding. By sharing content and through practice opportunities, we believe the UCSF educators helped the MUHAS group further its goals of implementing competency-based education. At UCSF, the MUHAS group critically examined the learning situations for adaptability at their own institution; members did not become either distracted or overwhelmed by the opportunities provided at UCSF.

## Formation of the HPEG

Toward the end of its training period at UCSF, the group decided to call itself the HPEG. This marked recognition of the group's importance to MUHAS and its determination to continue as an independent group. Before leaving UCSF, the HPEG members generated recommendations to MUHAS. In addition to affirming that MUHAS should offer faculty development workshops and the postgraduate course that had been the basis of the HPEG training, the group made two recommendations: (i) that MUHAS management recognize and reward excellence in teaching; and (ii) that MUHAS lead in the development of a nationwide academy of health educators in Tanzania to promote excellence in teaching throughout the country.

## Extension of the HPEG

The visibility of these clinical HPEG members, through their involvement in the curricular review process and ongoing series of educator workshops for faculty, spiked interest in education among basic science faculty. In April 2011, five faculty members from the departments of biochemistry, physiology, anatomy, and pharmacology joined the nine founding members of the HPEG. The new members comprised four men and one woman; one senior lecturer and four lecturers; four department heads and the director of planning for the university. A basic scientist from UCSF (Author SO) visited MUHAS and worked extensively with these basic scientists on strategies for teaching sciences. This group then visited UCSF, pursuing experiences there similar to those of the initial cohort but with greater emphasis on how to relate basic sciences to clinical concepts.

## Short-Term Impact of the HPEG on Education at MUHAS

Although the ultimate goal was to benefit health system activities and health outcomes in Tanzania, we can only describe the short-term outcomes of HPEG activities at MUHAS. Our thesis is that health professionals will provide better protection and prevention as well as higher quality care when trained in an educational environment in which the institution: (i) makes targeted efforts to equip faculty to teach and assess performance of their students and to work in supportive, collegial





ways with other teachers; and (ii) prepares specialist postgraduates to enter careers as educators.

### **Delivery of education workshops to faculty at MUHAS**

Between November 2010 and July 2011, the HPEG delivered the seven 3-hour workshops they developed with the input of UCSF colleagues. Typically, each workshop had two HPEG leaders from different professions, thus modeling interprofessional teaching. Approximately 20–25 participants attended each session, with the series reaching a total of 182 of the 285 faculty from MUHAS schools and institutes. Faculty who attended the workshops reported having more confidence using teaching, learning, and assessment methods that were new to them. Owing to high demand, the HPEG repeated the full content of the previous seven workshops twice during a week in June 2011 using a new format. According to one HPEG trainer, participants reported that they would have benefitted more had these training activities preceded their revising curricular as they would have better understood new curricular terms ‘like your OSCEs, OSPE, 360 global rating and MCQ types’. These terms reflect tools used to collect assessment data. The trainer went on to say, ‘They really understand methods now and are more comfortable applying them’. She noted that colleagues often come to her after workshops for feedback on an assessment item they have developed, such as a multiple-choice question (Author DM).

### **Delivery of an education course to postgraduates at MUHAS**

In the second semester of 2011, the HPEG offered a pilot education course for postgraduate students at MUHAS. These postgraduates, enrolled in 3-year programs in dentistry, nursing, medicine, pharmacy, and public health, are of similar status as clinical trainees called residents in the United States. In Tanzania, they comprise future faculty for professional schools and the primary workforce for tertiary health-care facilities. Many of the postgraduates will eventually work as specialists in government health facilities throughout Tanzania. These specialists will be called upon to supervise and provide continuing professional development for their colleagues; learning to become effective teachers is crucial to their success. Others will enter teaching institutions to fill the

shortage of teachers and, to help turn a short-term effort into a long-term strategy, will join the HPEG as the next generation of educators across the country. Immediately, they can serve as tutors or team leaders in the clinical environment for undergraduate professional students – the concept of peer-assisted learning is well supported in the literature.<sup>11</sup> The course proved popular, with 74 out of 115 eligible postgraduates attending voluntarily. MUHAS leadership then mandated participation in this course for all MUHAS postgraduates starting in the 2012–2013 academic year.

### **Contribution to the educational environment at MUHAS**

In addition to their roles as workshop leaders, HPEG members contributed to improving the quality of the new curricula by serving on university and school curriculum committees. They continue to advise colleagues both in their own school and across campus about curricular and teaching strategies. HPEG members support collaboration, for example, by proposing that faculty from the school of nursing provide first aid training for pharmacy students. The HPEG has also started cross-school collaborative research, including a study of medication errors in dentistry and microbial virulence factors associated with increased drug and biocide resistance.

As MUHAS had envisioned, the HPEG has begun to create an inter-professional teaching commons. A teaching commons is not a physical space but rather a culture where faculty members are comfortable talking about teaching and where colleagues and administrators acknowledge them for contributing to notable achievements in education.<sup>12</sup> Through the MUHAS teaching commons, faculty are more likely to sustain the practices shared in the seven faculty development workshops offered by the HPEG. The shift at MUHAS is dramatic, representing a major investment in improving the educational process and outcomes for its students – so that they will succeed as practitioners.

### **Review of the Change Agent Approach to Building Educational Leadership**

There are a number of approaches to building educational leadership. Some institutions deliberately set out to generate their leaders within the institution by offering selected faculty cohorts a fellowship program



specializing in health professions education.<sup>13,14</sup> Searle and colleagues describe this approach as ‘a single cohort of medical teaching faculty who participate in a set of extended faculty development activities’, of which an important institutional goal is to foster connections and community among clinical departments.<sup>15</sup> Recent discussion of ‘educating educators to educate’ has shifted from the faculty cohort toward a teaching commons or community-of-educators approach, as defined by Huber and Hutchings<sup>12</sup> and extended by O’Sullivan and Irby.<sup>16</sup>

Other institutions allow, encourage, and support faculty to pursue their interest in gaining qualifications in education elsewhere with the intention that upon their return from fellowships they will impact academic vitality. The training institutions prepare educational leaders from a number of institutions through train-the-trainer (or educate-the-educator) programs. For more than 25 years, Stanford University has prepared physicians with the skills to teach others at their own institution to be effective clinical teachers.<sup>17</sup> The FAIMER Institute selects fellows from a global pool to participate in a program in education methods, research, and leadership.<sup>10</sup> Kassam *et al*<sup>18</sup> developed a ‘sandwich’ program for fellows selected by their home and partner institutions to build individuals’ skills and establish a significant number of fellows at the home institution at least in one specialty. Our change agent approach builds on and extends the characteristics of the above approaches; we focused on developing a local program at MUHAS, but included an exchange component at UCSF.

### Summary of the educator change agent approach

The approach comprised three major characteristics:

- (1) *Motivation at the home institution:* MUHAS, as the ‘home’ institution, wanted to build and transform its educational environment, having just gained its charter and wishing to encourage interprofessional activities across its schools and institutes. Institutions intending to initiate change benefit from a sense of urgency.<sup>19</sup>
- (2) *Expertise in faculty development at the partnering institution:* UCSF has considerable experience with faculty development programs<sup>19,20</sup> primarily aimed at building its own faculty from within. UCSF worked with MUHAS leadership to jointly develop a flexible approach for UCSF to contribute to shaping faculty development at MUHAS.

- (3) *An interprofessional cadre of change agents:* MUHAS decided to: (i) select as change agents a small interprofessional group of promising junior faculty who understood the significance of this role and the work it would entail; (ii) prepare the change agents at MUHAS, encouraging them to challenge suggestions from UCSF to ensure local relevance of faculty development learning and to examine critically at UCSF ways of teaching and learning in a similar, although far better resourced, environment; and (iii) support the group to develop and present faculty workshops and to pilot the postgraduate course education.

Even without the critical need to move quickly, we would recommend this approach to developing change agents. Three strategies in our approach may contribute to the HPEG's eventual impact:

- (1) *Peer learning and mentoring:* The MUHAS group employed the concepts of peer learning and mentoring. We asked a senior MUHAS professor who attended all HPEG activities to lead the group as he was in a good position to support his younger colleagues.
- (2) *Pilot programs:* MUHAS has a number of regulations that must be followed for course changes. To move flexibly, the group implemented pilot programs; HPEG members experimented in their respective teaching settings. They led a pilot version of the course designed for postgraduates before mandatory implementation at full scale. They made changes that fit both their teaching and local needs.
- (3) *Educational scholarship:* Although MUHAS faculty had limited experience with educational scholarship, the institution was willing to consider such activities for advancement. HPEG members designed evaluations of the workshops, postgraduate experience, and their own formation to yield critical evidence for sustaining the HPEG teachings within the institution. We recognize the need to examine the HPEG formation, but we believe this needs to be studied with the help of someone external to the group.

MUHAS created a community of educators who value talking about how to teach and how to help students learn. The HPEG members formed three kinds of networks: educational, scholarly, and social. The social connections allowed for reaching out to one another in new ways to address issues at MUHAS such as more efficient teaching. The



HPEG bridged the silos across professions, thereby decreasing isolation from previous autonomous functioning of each of the professional schools. In this regard, MUHAS can serve as a model for other institutions.

## Conclusion

Many institutions have developed processes to recognize educators for their work in teaching, curriculum development, assessment, mentorship and advising, and leadership.<sup>21</sup> HPEG members described their work at a national meeting in Dar es Salaam in October 2011 and proposed the formation of a Tanzanian Academy of Health Professions Educators.<sup>22</sup>

Shortages of staff and of other resources in the health sector and in higher education institutions in Tanzania affect the quality of health workers' practice and their morale. Faculty at universities can enliven the minds of students, preparing and encouraging them to practice in the rural areas where they are most needed. Faculty can create an environment that allows them to interact with their learners – and their learners with each other. With curricula aimed at building their professional performance and with educationally prepared and supportive faculty, we hope to equip students and fire them with enthusiasm to serve the health needs of the people they serve.

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