NEW EDUCATIONAL METHOD

The Ripple Effect: A Train-the-Trainer Model to Exponentially Increase Organizational Faculty Development [version 1]

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Abstract
This article was migrated. The article was marked as recommended.

Introduction:
Faculty development is a key component of undergraduate and graduate medical education and is required for accreditation. Many institutions face the challenges of training large numbers of faculty at multiple locations on a recurring basis. In order to meet the faculty development demands of our organization, we implemented a train-the-trainer model of faculty development.

Methods:
A train-the-trainer program was created using deliberate practice as the theoretical framework. The primary goals of the program were to enhance content knowledge and develop facilitation skills of the participants (called faculty trainers). Two separate cohorts received 40 hours of in-person training consisting of attending the faculty development workshops as a learner, providing feedback to course faculty, facilitating and participating in journal club sessions on relevant content, and practicing facilitation and receiving feedback on the workshops. Cohorts 1 and 2 were trained on how to deliver 6 and 7 workshops, respectively. An additional 16 hours of training and further feedback occurred when faculty trainers delivered the workshops at outside institutions.

Results:
Twenty-nine faculty trainers from 15 specialties and subspecialties were trained, including 18 in the first cohort (January 2018) and 14 in the second cohort (February 2019) with 3 who participated in both cohorts. From January 2018 to January 2020, faculty trainers delivered 298 workshops to 3742 attendees at 25 locations. For the faculty trainers, 1477 evaluations were completed with 1031 (88.1%) rated as excellent, 141 (9.5%) rated as good, and 8 (0.5%) as average. There were no fair or poor ratings.

Discussion:

Our train-the-trainer program effectively developed a community of national faculty developers. Faculty trainer output was substantial and early evaluations of performance were positive. The model outlined in this paper serves as a potential sustainable model for other institutions desiring to train a cadre of faculty developers for their organization.

Keywords
Faculty development, train-the-trainer, residency, deliberate practice
Introduction
Requirements for faculty development in medical education continue to increase. These include foundational skills that most educators should be familiar with such as direct observation, creating a positive learning climate, and giving effective feedback. Additionally, there are certain skills that are necessary for program and institutional level leaders such as curriculum development, leadership, establishing programs of assessment, and developing wellness programs. Often, there are not enough faculty development opportunities to meet the needs of numerous educators with varied schedules and productivity demands of clinical practice. Furthermore, there are increasing requirements from accrediting bodies in medical and dental education for faculty development of all clinician educators (Accreditation Council for Graduate Medical Education (ACGME), 2018), (Liaison Committee on Medical Education (LCME), 2019), (Commission on Dental Accreditation (CODA), 2019). The message is clear: no longer is expertise in a clinical area enough. All educators in the health professions would benefit from specific training in evidence-based educational principles, but institutions struggle to meet the needs of our educators.

Our organization is characterized by one medical school, and more than 200 graduate medical education (GME) programs conducting training in multiple outlying academic hospitals spread across the country. Additionally, faculty turnover rate is significantly higher than the national average (Servey, McFate, and Reamy, 2018). As a result, historically, the organization has struggled to meet the ever-increasing demand for faculty development, especially for foundational educational topics such as feedback and learning climate. This problem led us to explore a train-the-trainer program for nationwide faculty development.

A train-the-trainer model has been used for faculty development by national organizations (Osborn et al., 2004) and universities (Skeff et al., 1992). Arguably the most well-known and longest standing train-the-trainer model is the Stanford Faculty Development Program (SFDP) developed by Stratos and Skeff (Skeff et al., 1992). The program has trained hundreds of facilitators, nationally and internationally over 30 years, who have subsequently trained thousands of faculty locally at their institutions. There have been other programs that have seen success with local programs (Rosenbaum, Lenoch, and Ferguson, 2005). This model has also been used successfully outside of faculty development to increase medical knowledge and confidence. It has been used to educate physicians about end of life issues (Stratos et al., 2006) and pharmacists about pharmacogenomics (Lee et al., 2012). Each of these programs train faculty to deliver content to an external department or institution, but after the training there is no formal continued relationship for administrative support or update of materials. We set out to create a train-the-trainer program with centralized administrative support, that could adapt and expand over time to meet the Faculty Development needs of a national organization.

Methods
To meet the faculty development needs of one of the largest national health systems in the United States, we utilized a train-the-trainer model. The goal of the program was to develop a sustainable cadre of faculty developers who could deliver essential, foundational faculty development topics at 21 hospitals, where students of the Uniformed Services University of the Health Sciences are educated. This system has a national faculty of approximately 5000 individuals appointed to the School of Medicine. Four initial faculty developers, termed “master trainers” for the remainder of this manuscript, conducted two separate training events, covering distinct topics. Three of the master trainers were graduates of the Stanford Faculty Development Program (K. M., R. R., and J. H.). The learners in this program will be referred to as “faculty trainers” for the remainder of the manuscript. The first cohort consisted of 18 faculty trainers, who were selected via recommendation by the designated institutional official (DIO) of their academic hospital. The second cohort of 14 faculty trainers were also selected by the DIO of their hospital, with the additional criterion of having served five years as academic faculty.

The theoretical frameworks informing the instruction of the faculty trainers was deliberate practice (Ericsson, 2008) and the experiential learning model based on Kolb’s learning styles (Armstrong et al., 2005). We created a program whereby the faculty trainers were given a well-defined goal, provided specific constructive feedback during training, and given multiple opportunities to iteratively practice, honing their facilitation skills with immediate, specific feedback. Our faculty trainers were motivated to improve, a requirement of deliberate practice theory. In our methodological approach to the program, we ensured the faculty trainers had various opportunities to self-reflect, engage in problem-solving, and develop plans for further personal improvements in facilitating faculty development.

The overarching goals of the training were to ensure content knowledge, develop facilitation skills of faculty trainers, and create a community of faculty developers. The two cohorts each received a 40-hour initial training course over a five-day period (See Supplementary File 1 for schedule). The initial five-day training consisted of attending the faculty development workshops as a learner, providing feedback to master trainers, facilitating and participating in journal club
sessions on relevant content (See Supplementary File 2 for bibliography) and practicing facilitation of the actual workshops (See Table 1 for topics). The real-time practice presentations were videotaped and then critiqued by the individual faculty trainer with additional comments from peers and master trainers. In addition to the content and facilitations skills, several other skills were taught in the initial week, including: critiquing academic presentations, audio-visual technology use, self-assessment of teaching, and collaboration techniques. Initial training was followed by two days of additional training (totaling 16 hours) at an academic hospital other than the faculty trainers’ home hospital. Additional training days included presenting faculty development workshops in front of an unknown audience, providing peer feedback to master trainers (specifically querying facilitation techniques), continued training on content and technology challenges for presenters, and enhancing organizational understanding of their role. Although not planned deliberately, mentoring occurred as well throughout the process. In total, each faculty trainer received 56 hours of training and had multiple opportunities for direct observation and feedback of facilitations skills (deliberate practice).

To determine the content for the first cohort, the four master trainers identified foundational skills and concepts for clinician educators. Identified topics were then cross referenced to organizational level data to determine the most requested and facilitated workshops over the prior three years. For the second cohort, we decided to train the faculty trainers on additional topics instead of repeating the initial six. We aimed to increase the range and variety of content available to the faculty at each training hospital and to build on the original foundational topics. Within our organization, master trainers deliver additional annual faculty development on advanced topics throughout our network of training sites. With a broad range of foundational topics available through the faculty trainers, master trainers could focus on more advanced topics that broadened the educational skills of clinician educators throughout the system.

In the second year of the program, we began updating the first six workshops. In order to build community, faculty trainers updated workshops in teams of two. Each team subsequently trained their colleagues via a journal club and a presentation of the updated material. This served three distinct purposes: refresh new principles and literature, review changes in the teaching materials, and maintain standardization. Administrative assistants ensured removal of old materials as new ones were added in our learning management system.

Our program has instituted an annual review of each faculty trainer consistent with our model of deliberate practice. First, we created a set of expectations, then master trainers review feedback from the workshops with each trained faculty as well as ensuring program expectations are met. These conversations are springboards for goal setting for the next year.

**Results**

A total of 29 faculty trainers were trained, 18 in the first and 14 in the second cohort (3 participated in both groups). Participants represented 12 of 21 (57.4%) of the organization’s academic hospitals. There were 15 specialties and subspecialties represented, including 2 dentists. The first cohort of faculty trainers began delivering workshops in January 2018 and the second cohort in February 2019. Between January 2018 and January 2020, faculty trainers delivered 298 workshops to 3742 attendees at 25 locations. Out of the original 29 faculty, one has moved into an enterprise-wide faculty development role, while two have decided not to continue teaching in the program. Ongoing efforts to expand the program continue. Sixteen of the faculty have chosen to participate in the expansion process, while ten have chosen to deliver only the material on which they were initially trained.

For all workshops, hard copy evaluations were distributed for hand-written feedback. Of the 1477 evaluations completed, 1031 (88.1%) rated the faculty trainers as “excellent,” 141 (9.5%) rated the faculty trainers as “good,” and 8 (0.5%) as average. No faculty trainer was rated as “fair” or “poor”. The remaining 1.8% were left blank at the Likert scale rating.

**Table 1. Faculty Development Train-the-Trainer Workshop Titles**

| Cohort 1                  | Cohort 2                  |
|---------------------------|---------------------------|
| Bedside Teaching          | Active Learning           |
| Feedback                  | Creating an Effective Poster |
| Large Group Teaching      | Direct Observation        |
| Learning Climate          | Milestones and EPAS      |
| Precepting                | Role Modeling            |
| Small Group Teaching      | Supervision               |
|                           | Writing Effective Narratives |
Discussion

Our train-the-trainer program has been an effective model to develop a community of national faculty developers. The primary model for our course was the SFDP. This program is the most well-known and longitudinally rigorous train-the-trainer program, and fortunately, it aligns with our content. Although we used an approach similar to the SFDP (Skeff et al., 1992), we had some distinct differences. In our program, there were two unique sets of workshops for the two cohorts. The course that we offered occurred over a week as opposed to the month scheduled by SFDP, which is a more feasible time frame for faculty to be away from their institutions for training. The number of workshops taught, and faculty attending have been significantly higher (Skeff et al., 1992). The survey results of faculty performance imply that even with only a week of dedicated training our faculty trainers were able to deliver the material effectively. This suggests that others could develop a similar more condensed train-the-trainer program for faculty development at their institution.

The strengths of our program align with the TRAIN (talent, resources, alignment, implementation, nurturing) framework (Mormina and Pinder, 2018) (Figure 1), which we believe will aid in our strategic long-term sustainability plans. This framework has a tiered approach: individual, organizational and supra-organizational. To align with this framework, we identify the faculty trainers as the individuals, the Uniformed Services University Faculty Development Program and the Uniformed Services University national faculty as the organization, and the Military Health System (MHS) as the supra-organizational structure.

Talent

On the individual level, our program was seeking enthusiastic, resilient individuals with academic aspirations, who were recognized as academic leaders in the local institutions. As such, we solicited input from DIOs at each institution to identify faculty trainer candidates who demonstrated a more strategic look at the program. After the first cohort, we identified additional requirements for faculty trainers to include increased experience levels within graduate medical education (greater than five years as faculty or a position of Associate Program Director or Program Director). In the future, our hope is a nomination package that aims to communicate the faculty nominee’s patience, receptiveness to feedback, and self-reflective skills. From the supra-organizational level, we looked at this as a talent management opportunity for the Military Health System. The hope was that selecting individuals for these roles would increase their sense of commitment to the MHS, provide them with leadership opportunities, and ultimately build the future GME and undergraduate medical education leaders for the MHS.

Resources

Resourcing is an indispensable component to the success of this program. Protected time for training, preparation, and delivery of workshops is essential for the faculty trainers. While the individual trainers and the time that they dedicate are our greatest resource, the organization found that the key to sustainability is a centrally located administrative section. The central administration responsibilities consist of budgeting, maintenance of the learning management system, supervision of program evaluation needs, and direct support of the faculty trainers. The central budget supports educational material purchases and travel funding. The administrators continually update the learning management system as our organization grows and changes. They manage sign-in sheets and evaluations, provide information to the faculty trainers regarding the anticipated audience for their workshops, and manage continuing medical education and university faculty development.

Figure 1. TRAIN framework.
certificate needs. An additional benefit from the central administrative support is that it necessitates fewer personnel. From the supra-organizational perspective, our hope is that with increasing recognition of the service provided by the faculty trainers, increased protected time and resources would be dedicated by the MHS. This, in turn, provides the MHS with the resource of well trained, committed, advanced medical educators.

Alignment
Alignment is an essential principle of our program. The interests and motivations of the individual trainers must align with the organizational goals which have to align with the strategic objectives of the MHS. Enlisting the assistance of the Program Directors and DIOs in selection of faculty trainers was our first means of seeking this alignment. We wanted to ensure that the faculty trainers’ goals were consistent with the program, and that they were ultimately interested in pursuing an academic career. We recognized early that high levels of emotional intelligence and outstanding communication skills would be necessary for the individual faculty trainers to succeed with the training, at their local institutions, and as they traveled to outside hospitals. The DIOs were able to identify faculty trainers who were strong in these areas, but we also incorporated elements of these skills into the program.

From an organizational and supra-organizational perspective, we articulated the intention to create the train-the-trainer program to PDs and DIOs early in an attempt to ensure we were addressing the true needs of stakeholders. As the program grew, we maintained the lines of communication to ensure that we could adapt. For example, as the ACGME requirements grew to include specific areas for faculty development, we developed workshops in these areas to ensure national faculty could meet these requirements. For this reason, we chose to create seven new workshops for the second cohort of faculty trainers. This allowed faculty trainers to deliver a total of 13 workshops. To further meet the needs of our GME community, we created tracking programs so that we could report workshop attendance by national faculty back to the GME programs for accreditation purposes.

Implementation
Early in the implementation phase, the focus was on the individual faculty trainers and optimizing the training they received. As described in our methods section, we instituted training based on the Kolb cycle (Armstrong et al., 2005) as well as Ericsson’s deliberate practice model. In order to ensure material continued to meet the needs of the stakeholders and to ensure all material was current, we implemented new material and revision teams among the faculty trainers. This increased the commitment and community amongst the faculty trainers. This further displayed the program’s commitment to lifelong learning and growth.

Institutional support for the implementation of the program was necessary in the form of protected time for faculty trainers. Without protected time, this would not have been possible and may be a barrier for some institutions. We continue to work within our organization and with the MHS (supra-organization) to ensure these faculty trainers are recognized for their efforts.

Nurturing
Our program’s training did not conclude with the end of the initial intensive week. We continued to observe and give individual feedback. Prior to delivering the workshops individually, each faculty trainer traveled to an unfamiliar location to deliver workshops with the master trainer team. The additional time allowed more individual mentoring and relationship building. Annually, faculty trainers each have a feedback and coaching session with one of the master trainers after the evaluation forms for all workshops are reviewed. In addition to the coaching provided, mentoring relationships with the master trainers were also maintained to address issues of personal and professional development. We believe the ongoing support from the master trainers, and from peers, has been key to the sustainability of our program and to the continued growth of our faculty trainers. The continued relationships expand on other published train-the-trainer programs.

In addition to the support provided by the master trainers, the central administrators provide an additional route of ongoing nurturing and assistance. The administrators help with arranging all travel, managing schedules, and ensuring responsiveness for any issues that arise. The administrators also continue to help manage the online repository of talks and background materials.

Beyond the nurturing of the faculty trainers, the program itself requires nurturing. The program began branding its products and reporting its successes to stakeholders at various levels within the organization and supra-organization. Faculty trainers are encouraged to deliver educational workshops as teams at various society meetings and other conferences for their own professional development, as well as to increase recognition of the program. These talks provide further opportunities for deliberate practice.
**Challenges and Limitations**

In our program, we experienced a few challenges which need to be acknowledged as another university or organization may choose to develop a similar program. First, there was some angst expressed by faculty trainers about using teaching materials developed by someone other than themselves. This is part of standardization and similar to the SFDC program (Skeff et al., 1992), yet the master trainers recognized this as a problem. We combatted this by allowing the faculty trainers to make a few defined changes to feel more authentic. Additionally, having teams of faculty trainers update the workshops enhanced comfort with the standardization process. A second challenge was that the faculty trainers did not report to the University leadership directly. Similar to other programs, the amount of faculty development each faculty trainer can deliver may be time limited by local hospital leadership. Another challenge is that the motivation varies among individual faculty trainers to deliver workshops, which workshops, and to what audience based on the confidence of that person. We attempted to optimize the challenge with transparent expectations for those nominating the faculty trainers, as well as clear (and later written) expectations to continue to be part of the program.

**Conclusions**

A train-the-trainer model using the deliberate practice framework and the Kolb Cycle is an effective intervention to both magnify the number of foundational faculty development workshops available to our faculty, and to create highly skilled faculty developers. The model provides an example that other organizations could use to expand their faculty development teams.

**Take Home Messages**

- A train-the-trainer model can effectively increase faculty development in a standardized fashion for an organization or health system.
- Having a training plan based on the theory of deliberate practice can ensure confidence through practice and specific feedback.
- Using the TRAIN framework can help strategically consider individual, organizational and supraorganizational considerations for faculty development sustainability.

**Notes On Contributors**

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Declarations
The author has declared that there are no conflicts of interest.

Ethics Statement
Designated non-human research (exempt with no further IRB follow-up required). Approved at Joint Base San Antonio-Lackland IRB, 59th Medical Wing, in San Antonio TX, USA. Reference Number - FWH20190096N.

External Funding
This article has not had any External Funding

Acknowledgments
Disclaimer: The views expressed in this article are those of the authors and do not represent the views or official policy of the Uniformed Services University of the Health Sciences, the Department of the Army/Navy/Air Force, the Department of Defense or U.S. Government.

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Source: Mormina, M., Pinder, S. A conceptual framework for training of trainers (ToT) interventions in global health. Global Health 14,100 (2018). https://doi.org/10.1186/s12992-018-0420-3.

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Version 1

Reviewer Report 16 August 2020

https://doi.org/10.21956/mep.20078.r30894

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Helena Filipe
Hospital of the Armed Forces/PL-EMGFA

This review has been migrated. The reviewer awarded 4 stars out of 5

The abstract overviews the Authors' journey in designing, implementing and evaluating a faculty development program based on the Kolb's cycle and "deliberate practice as a framework". A brief mention of the TRAIN framework in the abstract would consistently link with the judicious explanation in the long discussion section and how this investigation methodology suits its structure. Throughout the manuscript we can feel the feeling of excitement, commitment and willingness of Authors to create safe collective and fulfilling learning spaces for "faculty trainers". The introduction builds well the case for the investigation ahead described and is appropriately evidence informed. Authors emphasise the need to provide evidence-based learning opportunities to all healthcare educators to meet increasing expectations and requirements from accrediting bodies. This work adds to the previous nationwide faculty development programs by expanding beyond a scalable central live experience to provide the opportunity to build a community of learning. The methodology is described to the point of replication and is evidence informed. A note of remark for the wonderful collection of curated bibliography the Authors share with the reader. The table shows well the topics approached during both learning programs. Probably a flowchart could be helpful to illustrate and visualize the overall research process used. In the results section a diagram could also be helpful. The discussion session could (perhaps) be summarised. A diagram combining the TRAIN framework components with the elements of this research as reasoned by the Authors would help the reader visualising why and how the methodology pertains this model. The TRAIN framework provides theoretical ground to justify the sustainability of this program in the future, ensuring its continuity, providing a longitudinal learning opportunity and nurturing a community of practice. In the conclusions section, Authors emphasize that their research is based on a deliberate practice framework and Kolb Cycle. Would like to see in the Take Home messages some allusion to the community of practice mentioned at the beginning. In summary the article focuses a relevant topic, overall reads well, is well organised and adds to previous science. Some suggestions are
provided above. In a next paper, it will be good to see all cohorts sharing exactly the same instruction modules, community of practice follow up and feedback collected from the participants in programs conducted by the Faculty trainers of this faculty program.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 08 August 2020

https://doi.org/10.21956/mep.20078.r30897

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Megan Anakin
University of Otago

This review has been migrated. The reviewer awarded 2 stars out of 5

The title of this article caught my attention. I am a faculty developer and I was curious about how a train-the-trainer model might be able to exponentially increase organizational faculty development. To strengthen the claims made in the opening paragraph of the introduction, please consider supporting the claims made about the increasing need for faculty development and skills needed by all educators with references to the literature. To enhance the introduction for the reader, the authors may wish to discuss the literature about the train-the-trainer programme before introducing the new methods’ context and aim. To help the readers understand the results that are reported, the authors may wish to consider describing the evaluation instruments, and the data collection and analysis procedures in the methods section. In the discussion section, the authors state, ‘Our train-the-trainer program has been an effective model to develop a community of national faculty developers’, however, missing from the earlier sections of this article is a description of the features that will be examined or measured to determine the effectiveness of the train-the-trainer programme. Please consider describing how the effectiveness of the programme was measured and specify the methods used. Please consider spelling out and defining the term SFDP is used in the second sentence of the discussion section to help the reader understand how it was used as a model for the train-the-trainer programme. Please consider introducing this term earlier in the article so the reader is familiar with it when it is used to make comparative comments in the discussion section. Please consider substantiating the claim in the discussion that ‘The number of workshops taught, and faculty attending have been significantly higher’ with statistical results of data analysis presented in the results section. Please consider presenting the evaluation questions used in the methods section so that reader can better understand how the evaluation results presented in the results section support the claim ‘The survey results of faculty performance imply that even with only a week of dedicated training our faculty trainers were able to deliver the material effectively’ in the discussion section. Please consider explaining the link between this claim and the suggestion ‘that others could
develop a similar more condensed train-the-trainer program for faculty development at their institution'. Alignment between the train-the-trainer programme and the TRAIN framework is explained in the discussion section, however, to enhance the relevance of this explanation for the reader, the authors may wish to make more explicit links to the evaluation results of their study. Please consider introducing the TRAIN model in the introduction section so the reader is familiar with this model before the discussion section. Please consider discussing several methodological challenges and limitations of your evaluating your new method along with those identified for others who might be planning to implement a similar programme. Please consider revising the first sentence of the conclusion to better reflect the results of the study. I would be very happy to review a revised version of this article.

**Competing Interests:** No conflicts of interest were disclosed.
experiential model already anchoring the design, do we need another?- Program evaluation is the weakest part of this initiative. A very brief nod to participant satisfaction is all that I see. Since nurturing seemed to be an important aspect of the program, some self-reports of behavior change might be useful, thus targeting higher levels of Kirkpatrick pyramid of outcomes. - Finally, I would like some recommendations from the authors to other educators with less resources on how they may adapt a program such as this to their own local context.- Though deliberate practice and Kolb’s model are mentioned, the authors could make the link between principles and their application more clear and obvious- especially for those who are less familiar with the details of these models. What steps of the program mirrored what principles, for example.All in all, this article would be useful for all those engaged in faculty development of clinical educators. But readers would need to distill what aspects of this model would be feasible and applicable to their own context.

**Competing Interests:** No conflicts of interest were disclosed.

Reviewer Report 05 August 2020

https://doi.org/10.21956/mep.20078.r30895

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Felix Silwimba
University of Lusaka

This review has been migrated. The reviewer awarded 5 stars out of 5 very important approach to effort at improving the quality of medical educators.it is an approach worth trying in low income countries .

**Competing Interests:** No conflicts of interest were disclosed.