Original Research

Functional Mentoring: A Practical Approach With Multilevel Outcomes

Luanne E. Thorndyke, MD; Maryellen E. Gusic, MD; Robert J. Milner, PhD

Introduction: *Mentoring is a central component of professional development. Evaluation of "successful" mentoring programs, however, has been limited and mainly focused on measures of satisfaction with the relationship. In today's environment, mentoring programs must produce tangible outcomes to demonstrate success. To address this issue, the authors advance the framework of* functional mentoring *combined with measurement of outcomes at multiple levels.*

Methods: *The mentoring program is embedded within an intensive, continuing medical education (CME) accredited faculty development program. Survey methodology is used to collect qualitative and quantitative data at the start, midpoint, and end of the program and longitudinally. Participants in 4 years of the program were surveyed.*

Results: *In 4 years, 165 faculty participated in the program. Respondents were highly satisfied with the pairings: 85% of junior faculty believed their mentor had a significant effect on their projects. Junior faculty reported a significant enhancement of skills related to initiating and negotiating a new mentoring relationship (85%) and stated that their project would have a significant impact on their career (92%) and on the department or institution (86%).*

Discussion: *The success of this mentoring program is demonstrated at multiple levels. The key outcome of functional mentoring is the project. Projects are aligned with professional responsibilities and with institutional missions. The project contributes to the individual's dossier and adds value to the institution.* Functional mentoring *is a practical approach that allows measurable results at multiple levels.*

Key Words: *mentoring, faculty development, program evaluation, junior faculty, continuing professional development*

Introduction

Mentoring is a central component of professional development.[1,2] Mentoring encompasses a supportive relationship and a teaching-learning process.[2–6] It involves coaching, role modeling, assessing, and sponsoring.[6,7] Effective mentoring enhances professional socialization,[8] career development,[9] and faculty advancement.[1,4–6,10,11] Institutions benefit through enhanced faculty productivity, engagement of senior faculty,[4] and sustained institutional vitality.[10] Traditionally, mentoring relationships develop somewhat informally from personal and professional interactions.[8] Alternatively, academic medical centers have established institutional mentoring programs to combat the historically prevalent "sink or swim" mentality, recognizing that human resources—faculty—represent an organization's greatest capital.[12] Investment of personnel and resources in such programs, however, carries a responsibility to produce a return on investment.[13,14]

While there is variability in mentoring programs,[2,4,5,8,15] institutional programs typically emphasize the pairing process and logistical components.[15–17] The usual, primary outcome of these programs is the establishment of a "successful" relationship.[1,18,19] Traditional mentoring focuses on the relationship between mentor and protégé (FIGURE 1). A meta-analysis[15] of mentoring programs in academic medicine, however, showed that a majority of programs were limited in both short- and long-term evaluations. The authors indicate that "each . . . assumed the 'success' of their programme; but this term was not defined. Moreover, the method of measuring success has not been standardized." Research on the longitudinal impact and influence on career success

Dr. Thorndyke: Associate Dean for Professional Development; Professor of Medicine, Pediatrics, and Neural & Behavioral Sciences, Pennsylvania State University College of Medicine, Hershey, PA; *Dr. Gusic:* Associate Dean for Clinical Education; Professor of Pediatrics, Pennsylvania State University College of Medicine, Hershey, PA; *Dr. Milner:* Director, Office of Post-Doctoral Affairs; Professor of Neural & Behavioral Sciences, Pennsylvania State University College of Medicine, Hershey, PA.

Correspondence: Luanne E. Thorndyke, Penn State Hershey College of Medicine, Office of Professional Development, Mailcode H117, 500 University Drive, P.O. Box 850, Hershey, PA 17033-0850; e-mail: lthorndyke@psu.edu.

 • Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/chp.178

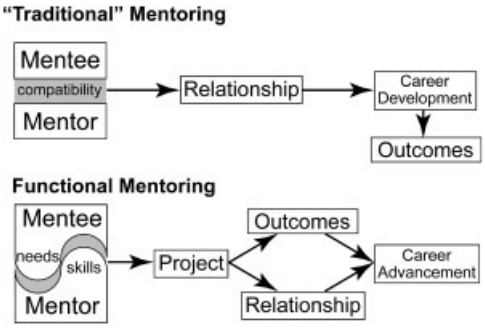

FIGURE 1. Comparison of "traditional" and functional mentoring. In the traditional concept of mentoring (top) the relationship is key, cemented by compatibility or "chemistry" between the partners, leading to career development of the mentee and subsequent outcomes. In functional mentoring (bottom) a mentor is chosen with the specific skills to match the needs of the mentee for their project. The project is a tangible outcome for the mentee and provides a benefit for the institution. The outcomes lead to career advancement of the mentee. The functional mentoring relationship may also evolve into a more traditional mentoring relationship.

of participants in structured mentoring programs is also lacking. Furthermore, impact on the institution has not necessarily been an expected outcome of these programs. Thus, mentoring programs often fall short in a time of greater expectations of accountability. In today's environment, program evaluations should incorporate measures of higher-level outcomes.[3]

We offer a different paradigm for mentoring, *functional mentoring*, as an alternative to traditional concepts and formats for mentoring programs. Functional mentoring is the pairing of a mentee with a mentor who has specific expertise for guidance on a defined project (FIGURE 1). With functional mentoring, the objectives of the mentoring relationship are clearly defined and lead to tangible results. The effectiveness of mentoring and the impact of the mentoring program are measured by the work products resulting from the joint efforts of mentors and mentees. This paper describes the application and multilevel evaluation of functional mentoring within a continuing professional development program. We propose functional mentoring as a model (FIGURE 1) to structure mentoring that produces measurable benefits.

Description of the Program

The mentoring program is a part of the Penn State College of Medicine Junior Faculty Development Program (JFDP).[12] The JFDP was established to provide a foundation for faculty within the institution to achieve academic success. The mentoring program parallels a year-long curriculum in career development, research, clinical practice, and education. Each participant undertakes an individual project relevant to her/his professional responsibilities. The goal of the mentoring program is to provide expert guidance to junior faculty for their projects. Junior faculty initiate and manage a new mentoring relationship within a structured and supportive environment.

Selection of mentors is structured and purposeful. After a session on mentoring, participants determine aspects of their projects for which they need guidance and identify senior faculty who have corresponding skills/expertise. They are encouraged to consider individuals whom they do not know or might be reluctant to approach because of their position or reputation. The leadership team reviews the suggestions, may add to the list, and, with the approval of the mentee, finalizes the mentor selection. Cross-institutional collaborations are encouraged; thus the mentor should be from a different department than the mentee's and have no preexisting mentoring relationship with him/her. Gender and ethnicity are not considered in identifying mentors or in pairings.

The role of the mentor is clearly defined. The mentor is expected to guide and assist the mentee in work on his/her project. Junior faculty identify the goals for their projects, establish timelines, and schedule meetings. The mentor provides review, critique, and suggestions for the project. These defined roles guide development of the relationship. While career counseling and guidance outside the project are not formal expectations, it is anticipated that such discussions occur. The time commitment is 9 months (the duration of the JFDP). Mentoring relationships may continue thereafter, but the mentor's formal obligation ends with the program.

The leadership team monitors the progress of the relationships and is available if problems arise. No compensation is provided to the mentors; service is voluntary. Several social opportunities enhance the interactions between mentors and mentees and build a community of senior faculty mentors. Mentors are recognized at the graduation ceremony by induction into the Mentoring Academy of the College of Medicine.

Evaluation Methods

The structure of the program allows the evaluation of outcomes at multiple levels. With consideration of the evaluation framework proposed by Kirkpatrick and Kirkpatrick[20] and adapted by Moore,[21] outcomes of the functional mentoring program were measured at the following levels:

- Participation
- Reaction and satisfaction
- Impact of the mentoring relationship
- Skill development
- Individual projects (Evidence of transfer/performance)
- Impact of the project on the individual and beyond

The evaluation methodology is outlined in FIGURE 2. The assessment tools are instruments designed to collect both quantitative and qualitative data. Mentors and mentees complete a questionnaire at the end of the program. The progress of the mentoring relationships is monitored by a midpro-

DOI: 10.1002/chp

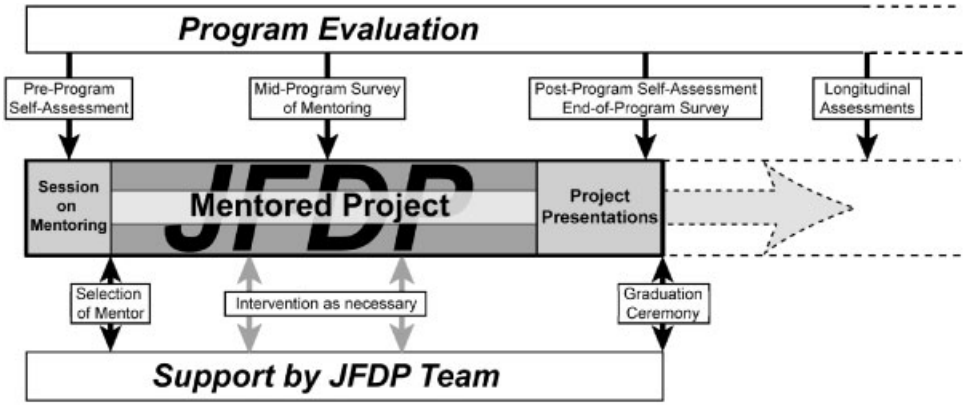

FIGURE 2. Organization of the mentoring component of the JFDP, showing the sequence of evaluation, the timeline of mentoring activities within the program, and support by the JFDP team. Participants were assessed (top row of boxes) by a pre- and post-program self-assessment, a mid-program survey of mentors and mentees, an end-of-program questionnaire, and longitudinal surveys at regular intervals following the program. Activities related to mentoring within the program (middle row) included a classroom session on mentoring, the mentored project itself, and presentations of their project by participants at the end of the program; the gray arrow to the right indicates that some projects continued after the end of the program. The JFDP team provided support (bottom row) through selection of mentors, individual intervention as necessary, and recognition of the participants and mentors in the graduation ceremony at the end of the program.

gram questionnaire distributed to mentors and mentees. Junior faculty perform a self assessment of their professional development at the beginning and end of the program. The career paths of the junior faculty and the status of the mentoring relationships are being tracked longitudinally with surveys distributed at regular intervals up to 5 years after completion of the program. The evaluation of the JFDP including the mentoring program and the longitudinal survey has received approval from the College of Medicine Institutional Review Board (IRB).

Results

Participation

In 4 years, 97 faculty have graduated from the JFDP. An additional nine enrolled but did not graduate: four left the institution during the program; five did not complete the requirements for graduation. Sixty-eight faculty have served as mentors (some mentors served more than 1 year). Characteristics of mentors and mentees are described in TABLE 1.

Reaction and Satisfaction

Junior faculty were highly satisfied with the program (TABLE 2). Over 90% of respondents appreciated the value of mentoring in their academic development.

"My mentor provides a mental spark that was lacking. He re-energized my work by his perspective, his openness, his patience, and his experience."

"Developing a relationship with a mentor from a different department who mentored valuable information based on experience and expertise a junior member doesn't have."

Mentors also expressed satisfaction with the program (TABLE 3). Not surprisingly, 100% of mentors supported the concept of mentoring. Mentors identified the best aspects of the mentoring relationship:

"Interaction with faculty from other areas/departments . . . having a specific goal/project."

"I have been able to provide him with advice as to how to go through the correct 'channels' to get his project imple-

TABLE 1. Demographics of Mentees and Mentors

Rank	Assistant professor	96	(99%)
	Other	1	(1%)
Tenure status	Tenure-track	22	(23%)
	Non-tenure-track	75	(77%)
Degree	MD, DO, DO	65	(67%)
	PhD	28	(29%)
	MD/PhD	4	(4%)
Gender	Male	57	(61%)
	Female	40	(39%)
Mentors	Total (2003–2007) = 68		
Rank	Professor	59	(87%)
	Associate professor	8	(12%)
	Assistant professor	1	(2%)
Degree	MD, DO, DO	40	(59%)
	PhD,VMD	28	(41%)
Gender	Male	59	(87%)
	Female	9	(13%)

Note: Mentees: total (2003–2007) = 97.

DOI: 10.1002/chp

TABLE 2. Mentee Evaluation of the Mentoring Program

Statement Rated	Those Who Chose *Agree* or *Strongly Agree* (%)	Mean Score for Item
Structure and framework		
I had adequate input into the process of selecting my mentor.*	75.4	4.02
I was comfortable with the choice of mentor.*	88.7	4.39
My mentor is readily available.	89.9	4.39
We meet on a regular basis.	82.3	4.04
Value of mentoring		
My mentor respects me as a person.	91.1	4.53
My mentor understands that I have a life outside of the institution.	75.9	4.18
I appreciate the value of developing a mentor-mentee relationship.	92.4	4.34
I believe that mentoring will help me advance my career.*	91.9	4.37
Impact of the relationship		
I have benefited from the mentoring relationship.	91.1	4.41
We have discussed goals for my academic development.	68.4	3.82
My mentor has involved me in professional activities within the institution.	43.6	3.41
My mentor has involved me in professional activities outside the institution.	29.5	3.10
I would like the mentoring relationship to continue.	81.0	4.22
I am better prepared to initiate and negotiate a new mentoring relationship.*	85.5	4.19
Impact of the project		
My mentor had a significant impact on my project.	84.6	4.19
My mentor provided valuable feedback on my project.*	86.9	4.39
I believe that my project will have an impact on my career.	92.3	4.51
I believe that my project will have an impact on my dept and/or institution.	86.1	4.27

Note: At the end of the program mentees were asked to rate each statement on the following scale: *strongly disagree* (1), *disagree* (2), *neutral* (3), *agree* (4), *strongly agree* (5); the mean scores were calculated from this scale. Only participants who completed the program were surveyed. For most statements data were combined from all 4 years of the program ($N = 79$; response rate = 81%). Some statements (indicated by *) were only included in the surveys for years 2–4 ($N = 62$; response rate = 85%). Some statements were adapted from a preexisting questionnaire.[27] These results include data previously reported for years 1 and 2 of the program.[12]

mented. I actually look forward to meeting with my mentee to see how he is progressing with his project."

The junior faculty perceived the value of working with a mentor outside their department, as illustrated by these selected comments:

"I really enjoyed working with somebody outside of my department. He had a different perspective, which was quite refreshing."
"Forced exposure to someone 'outside the box,' ie, someone I wouldn't necessarily have thought of."
"In addition to providing guidance, having a mentor from a different department also expands the potential for research, resources, and professional networking."

Impact of the Mentoring Relationship

Of the participants 85% stated that their mentor had a significant impact on their project; 87% reported that their mentor provided valuable feedback (TABLE 2). Mentees commented:

"Having the opportunity to work with an esteemed colleague [resulted] in a collaborative project that otherwise would not have taken place."
"My mentor was able to provide valuable insight for my project. She imparted not only guidance but enthusiasm. She made me see that it was possible."

Although not required by the program, some of the mentoring involved discussions of academic career goals and sponsorship of mentees in activities both within the institution and outside (TABLE 2). Almost all mentees and mentors (TABLES 2 and 3) indicated they would like the mentoring relationship to continue.

The vast majority of mentors indicated that they had benefited from the relationship (TABLE 3). Comments provided examples:

"It keeps me thinking about my own educational responsibilities."
"Imparting enthusiasm and excitement for a career in teaching, research, and patient care is perhaps the most important goal

DOI: 10.1002/chp

TABLE 3. Mentor Evaluation of the Mentoring Program

Statement Rated	Those Who Chose *Agree* or *Strongly Agree* (%)	Mean Score for Item
Structure and framework		
I was comfortable with the choice of mentee.*	100.0	4.55
My mentee is readily available.	72.4	3.69
We meet on a regular basis.	73.3	3.63
Value of mentoring		
My mentee respects me as a person.	93.5	4.29
My mentee understands my time constraints and proactively works to arrange meetings.	87.1	4.35
I believe that mentoring is a good idea.	100.0	4.87
Impact of the relationship		
I have benefited from the mentoring relationship.	86.7	4.03
I have received feedback from my mentee about our mentoring relationship.*	63.6	3.55
My mentee has requested assistance in areas outside his/her project.	35.5	3.10
I have referred my mentee to other faculty for help in a specific area.	76.7	3.77
I would like the mentoring relationship to continue.	83.9	4.00
I would be willing to serve as a mentor for the JFDP in future years.	77.4	4.06
Impact of the project		
I believe I have contributed significantly to my mentee's project.	83.9	4.03

Note: At the end of the program mentors were asked to rate each statement on the following scale: *strongly disagree* (1), *disagree* (2), *neutral* (3), *agree* (4), *strongly agree* (5); the mean scores were calculated from this scale. Only mentors of participants who completed the program were surveyed. For most statements data were combined from year 1 (2003–04) and year 3 (2005–06) of the program ($N = 31$; response rate = 74%). Two statements (indicated by *) were only included in the surveys for year 3 ($N = 11$; response rate = 61%). Some statements were adapted from a preexisting questionnaire.[27]

for mentors of young, eager faculty members. The enthusiasm that we as mentors receive back from young faculty is very inspiring."

Data from the longitudinal survey demonstrated continued appreciation of the benefit of the mentoring program and of the value of mentoring in general (TABLE 4). Comments from mentees included the following:

"We still discuss the project I was working on. I thought his input was important enough to my work that he will be an author on a publication."

TABLE 4. Longitudinal Study of Mentee Evaluation of the Mentoring Program

	6-Month Survey Year 1 (2003–2004) + Year 2 (2004–2005) ($N = 27$)		18-Month Survey Year 1 (2003–2004) ($N = 12$)	
Item	Those Who Chose *Agree* or *Strongly Agree* (%)	Mean Score	Those Who Chose *Agree* or *Strongly Agree* (%)	Mean Score
I appreciate the value of developing a mentor-mentee relationship.	96.3	4.37	100.0	4.33
I have benefited from the JFDP mentoring relationship.	85.2	4.11	67.7	3.75
I consider my JFDP project to be successful.	92.6	4.26	67.7	3.92
I still meet with my JFDP mentor.	48.1	3.07	41.7	3.00
I have established a new mentoring relationship.	42.3	3.08	33.3	3.17

Note: At 6 or 18 months after the end of the program participants were asked to rate each statement on the following scale: *strongly disagree* (1), *disagree* (2), *neutral* (3), *agree* (4), *strongly agree* (5); the mean scores were calculated from this scale. For the 6-month time point data from years 1 and 2 are combined. Only participants who completed the program were surveyed.

DOI: 10.1002/chp

[My mentor provided me] "collaboration with research projects. Has provided me with connections with another faculty [with] whom we will start another project."

Skill Development

Participants reported enhancement of skills related to initiating and negotiating a mentoring relationship: 85% felt more prepared to initiate and negotiate a new mentoring relationship (TABLE 2) and more able to identify and approach individuals for mentoring (FIGURE 3). Junior faculty also recognized enhancement of specific skills related to their projects (FIGURE 3). Additional data revealed application of skills related to identifying and obtaining mentoring. In the end-of-program survey, 49% of respondents had sought additional mentorship from a faculty member other than their assigned mentor. Further, in the longitudinal surveys, junior faculty reported that they had established new mentoring relationships after the program (TABLE 4).

Individual Projects

The primary outcome of the mentoring relationship is the work accomplished on the project. Projects were new ventures and encompassed institutional missions: education (35/97; 36%), research (53/97; 55%), and clinical practice (9/97; 9%). Most of the education projects (28/35) involved development of new courses or curricula: for medical residents (15), medical students (6), graduate students (3), or a mixed audience (4). Seven incorporated new teaching tools or technologies. The majority of research projects (33/53) concerned new aspects of ongoing research in basic science (10) or clinical research (23). Eighteen involved submission of grant proposals: 14 basic science and 4 clinical research. One project involved research administration and another identified nontraditional sources for research funding. The clinical projects involved establishing a new clinic or implementation of a novel clinical technique.

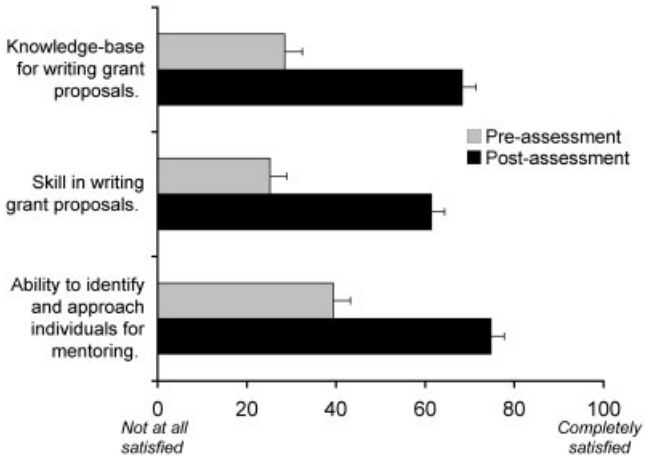

FIGURE 3. Mentees' perceptions of their capabilities in areas of career development before and after the program. Items related to mentoring or projects were extracted from a more extensive assessment tool. For each statement mentees were asked to indicate how satisfied they were with their level of knowledge, skill, or ability from *not at all satisfied* to *completely satisfied* by marking a line. Responses were converted to a 100-point scale and responses for each individual before and after the program were matched. Data from surveys of the 2004–2005 ($N = 24$), 2005–2006 ($N = 12$), and 2006–2007 ($N = 20$) programs were combined and the mean scores and standard errors for each statement for the pre-assessment and the post-assessment surveys are shown. Differences between the pre- and post-assessment responses for each item shown were statistically significant ($p < 0.001$) using a paired t test.

Impact of the Project

More than 90% of junior faculty believed that their project would have an impact on their career, and 86% believed that their project would have an impact on their department or the institution (TABLE 2). The data from the longitudinal follow-up showed the majority of respondents continued to consider their project to be successful (TABLE 4). Additional preliminary data demonstrate that new educational projects have been implemented in the curriculum, grants have been submitted and funded, and patients are being seen in new clinics. One mentor's comment emphasized the impact of the projects:

"I believe that I have helped my mentees make a real difference in how we educate students and residents through their projects, and I, in turn, learned a lot about them and their jobs, and their medical expertise has been valuable to me."

Discussion

Functional mentoring is the pairing of a mentee with a mentor who has the skills and expertise to provide guidance on a defined project. The work of the relationship is centered on the project, which has clear objectives and leads to measurable, multilevel outcomes. Some of the faculty development programs described in the literature have involved work on individual projects.[8,22–25] However, the unique aspect of functional mentoring is the focus on the project. The needs for the project drive the selection of the mentor, and work on the project gives structure to the relationship and defines its success. Using this framework (FIGURE 1), our mentoring program, embedded in a continuing professional development initiative, has provided a positive mentoring experience for 165 faculty across the institution.

A critical advantage of functional mentoring is the ability to measure the impact of mentoring at multiple levels. To accomplish the evaluation, we adapted models proposed by Kirkpatrick and Kirkpatrick[20] and Moore[21] for evaluating training and continuing education programs. We have documented high satisfaction, an increase in skills, transfer of skills (to establish new mentoring relationships, to complete projects), impact (of the project) on the individual, and impact (of the projects) on the institution. Since projects align

DOI: 10.1002/chp

with the work responsibilities of the junior faculty and are designed to contribute to their academic dossiers, these projects should contribute directly to career advancement. The projects and the products resulting from a successful project (funded grant, publication, leadership position, etc) may be early markers of academic success. The impact of the mentored project on individual career success and the long-term outcomes of projects are currently being investigated in an IRB-approved research project.

There are several limitations to the data and their interpretation. First, completion of all surveys was both voluntary and anonymous. While anonymity may promote honesty in the responses collected, it prevents identification of nonresponders for targeted data collection. Our response rates were reasonable and consistent with rates reported in other similar studies in the literature.[26] Second, results reported represented data collected immediately at the end of the program and longitudinally. Longitudinal data, obtained up to 18 months after program completion, are preliminary in that data will be collected for 5 years post completion of the program. Long-term effects of the mentoring program on career advancement cannot be assessed within the time frame of this study. Therefore, outcomes such as project completion, perceived increases in capabilities, and the persistence of mentoring relationships (TABLE 4) should be considered as immediate and intermediate markers of success. Third, the career development of the participants will be influenced by factors other than their project and will include the curriculum component of the JFDP. We are currently investigating the long-term outcomes of the projects and their impact on individual career success and on the institution. The evaluation in this report records immediate and intermediate outcomes to support the conceptual framework of functional mentoring and the need to define and measure multiple outcome levels of mentoring.

The application of this practical model of mentoring has enhanced the recruitment of busy senior faculty to serve as mentors. Expectations for mentors are defined and time-limited. Mentors are recruited for a particular project and are required to participate only for the period of the JFDP. Mentors are identified for their expertise (such as grant writing skills) or their knowledge in a specific area of science or medicine. For example, a senior physician who has established a successful multidisciplinary clinic for adolescents with eating disorders has mentored three junior faculty who each aspired to establish a multidisciplinary clinic. Senior research faculty can transfer skills in grant writing or lab management to protégés in other fields. Similarly, mentors with education expertise can provide pedagogical guidance for mentees who wish to design courses or curricula, regardless of content area.

The mentored project is critical to the overall success of the JFDP. The JFDP receives strong support from institutional leaders and is acknowledged as important for development of junior faculty, advancement of institutional missions, and recruitment of new faculty. Recognition of the effectiveness of the program has led to continued enrollment of junior faculty and recruitment of senior faculty mentors. Some junior faculty were identified for the program by chiefs/chairs to accomplish specific goals within the department through their mentored projects. Projects have contributed to the missions of the institution and therefore contribute to institutional vitality. Participation is reported to department chairs for recognition in dossiers and annual performance reviews.

Thus, this mentoring program achieves its major goal: to assist junior faculty in completing projects that contribute to their professional dossier and ultimately to their academic advancement. The program also provides junior faculty with the skills necessary to obtain mentoring throughout their career. Functional mentoring provides a framework that nourishes and maintains faculty commitment to mentoring and produces measurable results. We offer this practical approach to mentoring and the strategy for multilevel evaluation of mentoring programs as a model.

Lessons for Practice

- Functional mentoring provides an effective framework for institutional mentoring programs.
- Evaluation of mentoring programs must include multilevel assessment of outcomes to demonstrate impact and return on investment.

Conclusions

Functional mentoring provides an effective strategy for structured mentoring programs. Focused, time-limited relationships are initiated to address a specific need for an identified project. Successful pairings result in tangible products that provide a measurable outcome with impact for the individual as well as the institution.

Evaluation of mentoring programs must include multilevel assessment of outcomes to demonstrate impact and return on investment.

Acknowledgments

The authors thank Drs. R. Kevin Grigsby and John George for their critical review of the manuscript and our colleagues on the JFDP planning team: Drs. Alistair Barber, John George, and David Quillen. The longitudinal study of the Junior Faculty Development Program is supported in part by a grant from the Woodward Endowment for Medical Sciences Education.

DOI: 10.1002/chp

References

1. Pololi L, Knight S. Mentoring faculty in academic medicine. A new paradigm? *J Gen Intern Med*. 2005;20(9):866–870.
2. Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: A systematic review. *JAMA*. 2006;296(9):1103–1115.
3. Berk RA, Berg J, Mortimer R, Walton-Moss B, Yeo TP. Measuring the effectiveness of faculty mentoring relationships. *Acad Med*. 2005; 80(1):66–71.
4. Connor MP, Bynoe AG, Redfern N, Pokora J, Clarke J. Developing senior doctors as mentors: A form of continuing professional development: Report of an initiative to develop a network of senior doctors as mentors: 1994–99. *Med Educ*. 2000;34(9):747–753.
5. Kirsling RA, Kochar MS. Mentors in graduate medical education at the Medical College of Wisconsin. *Acad Med*. 1990;65(4):272–274.
6. Souba WW. The essence of mentoring in academic surgery. *J Surg Oncol*. 2000;75(2):75–79.
7. Mann MP. Faculty mentors for medical students: A critical review. *Med Teach*. 1992;14(4):311–319.
8. Morzinski JA, Diehr S, Bower DJ, Simpson DE. A descriptive, cross-sectional study of formal mentoring for faculty. *Fam Med*. 1996; 28(6):434–438.
9. Palepu A, Friedman RH, Barnett RC, et al. Junior faculty members' mentoring relationships and their professional development in U.S. medical schools. *Acad Med*. 1998;73(3):318–323.
10. Bland CJ, Seaquist E, Pacala JT, Center B, Finstad D. One school's strategy to assess and improve the vitality of its faculty. *Acad Med*. 2002;77(5):368–376.
11. Schrubbe KF. Mentorship: A critical component for professional growth and academic success. *J Dent Educ*. 2004;68(3):324–328.
12. Thorndyke LE, Gusic ME, George JH, Quillen DA, Milner RJ. Empowering junior faculty: Penn State's faculty development and mentoring program. *Acad Med*. 2006;81(7):668–673.
13. Gruppen LD, Simpson D, Searle NS, Robins L, Irby DM, Mullan PB. Educational fellowship programs: Common themes and overarching issues. *Acad Med*. 2006;81(11):990–994.
14. Kirch DG, Grigsby RK, Zolko WW, et al. Reinventing the academic health center. *Acad Med*. 2005;80(11):980–989.
15. Buddeberg-Fischer B, Herta KD. Formal mentoring programmes for medical students and doctors—a review of the Medline literature. *Med Teach*. 2006;28(3):248–257.
16. Jackson VA, Palepu A, Szalacha L, Caswell C, Carr PL, Inui T. "Having the right chemistry": A qualitative study of mentoring in academic medicine. *Acad Med*. 2003;78(3):328–334.
17. Walker WO, Kelly PC, Hume RF. Mentoring for the new millennium. *Med Educ Online*. 2002;7:15–21. Available at http://www.med-ed-online.org.
18. Lee JM, Anzai Y, Langlotz CP. Mentoring the mentors: Aligning mentor and mentee expectations. *Acad Radiol*. 2006;13(5):556–561.
19. Pololi LH, Knight SM, Dennis K, Frankel RM. Helping medical school faculty realize their dreams: An innovative, collaborative mentoring program. *Acad Med*. 2002;77(5):377–384.
20. Kirkpatrick DL, Kirkpatrick JD. *Transferring Learning to Behavior: Using the Four Levels to Improve Performance*. San Francisco, Calif: Berrett-Koehler Publishers; 2005.
21. Moore DE. A framework for outcomes evaluation in the continuing professional development of physicians. In: Davis D, Barnes B, Fox R, eds. *The Continuing Professional Development of Physicians: From Research to Practice*. Chicago, IL: AMA Press; 2003:251.
22. Bower DJ, Diehr S, Morzinski JA, Simpson DE. Support-challenge-vision: A model for faculty mentoring. *Med Teach*. 1998;20(6):595–597.
23. Morzinski JA. The influence of academic projects on the professional socialization of family medicine faculty. *Fam Med*. 2005;37(5):348–353.
24. Morzinski JA, Simpson DE. Outcomes of a comprehensive faculty development program for local, full-time faculty. *Fam Med*. 2003; 35(6):434–439.
25. Wingard DL, Garman KA, Reznik V. Facilitating faculty success: Outcomes and cost benefit of the UCSD National Center of Leadership in Academic Medicine. *Acad Med*. 2004;79(suppl 10):S9–S11.
26. Asch DA, Jedrziewski MK, Christakis NA. Response rates to mail surveys published in medical journals. *J Clin Epidemiol*. 1997; 50(10):1129–1136.
27. Doyle LL, Cooper G. *The Mentor's Mentor: The Mentoring Handbook, a Guide to Mentoring*. Little Rock, AR: Women's Faculty Development Caucus, College of Medicine, University of Arkansas for Medical Sciences; 1996.

DOI: 10.1002/chp