Laying the Foundation: Creating a Shared Mental Model of Peer Coaching Initiatives for Medical Educators

by

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ABSTRACT

INTRODUCTION: Peer coaching is a faculty development approach where two or more medical educators participate in direct observation of teaching, feedback, reflection, and collegial discussions. While valuable, there are few resources to guide peer coaching initiative design and implementation.

METHODS: The authors conducted a website review to synthesize knowledge of peer coaching initiatives at North American medical schools. Then, they convened a video-teleconference focus group using nominal group technique to achieve consensus on best practices of peer coaching for medical educators.

RESULTS: This thesis synthesized knowledge across 45 peer coaching initiatives and created 17 best practices. Findings include recognition of peer coaching as voluntary, formative, confidential process. Additionally, experts recommended utilizing a three-phase process including a pre-observation meeting for goal setting, a direct observation, and a post-observation debrief.

CONCLUSIONS: This thesis presents practical resources for medical educators interested in designing and implementing peer coaching initiatives and lays the foundation for future collaboration and research.

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CHAPTER 1: INTRODUCTION

BACKGROUND

Medical educators may find it difficult to stay current with teaching technologies and insights in adult learning as opportunities for formal training in teaching are rare (59; 64). This lack of faculty development may have negative effect on learning outcomes and may translate to substandard patient care (39; 59). To address this issue, faculty development related to teaching is designed and offered with the aim to improve an educator's knowledge, skills, and attitudes on teaching(55). Traditionally, faculty development consists of longitudinal initiatives, fellowships, workshops, and seminars (61). While valuable, these faculty development approaches require a significant time commitment and may only be available to some faculty. Furthermore, seminars and workshops usually lack opportunities to 'learn by doing' within the authentic teaching environment, which may hamper knowledge transfer (58).

One approach to faculty development in higher education has been the creation of peer coaching programs. Huston and Weaver describe peer coaching as "a collegial process where two faculty voluntarily work together to improve or expand their approaches to teaching (28)." It is a form of workplace learning that combines peer observation of teaching practices with associated feedback. However, it can also involve consultation on teaching experiences, curriculum design, or it can be used to support other faculty roles such as leadership development or research (40). Peer coaching is based on a trusting collegial relationship that promotes shared reflection, and learning is typically situated in one's own teaching context (6).

Two models of peer coaching, reciprocal and instructional, are commonly described in the literature. Reciprocal coaching pairs teaching faculty with similar backgrounds and experience to observe teaching and provide feedback to each other (44; 51; 54). This is commonly referred to as a peer-to-peer model (51). Meanwhile, instructional coaching occurs when a peer coach with advanced expertise is selected to provide guidance on specific research-based teaching practices (53). This is commonly referred to as an expert-to-novice model (51). Peer coaching has also been studied in various locations including outpatient clinic, ward, operating room, and classroom (51; 53; 54). One example is a recent study by Pierce *et al* who evaluated reciprocal peer observation on inpatient internal medicine ward rounds (51).

Peer coaching as a form of workplace-based faculty development has garnered interest in medical education (6). Peer coaching has many benefits for medical educators, including improving teacher satisfaction and confidence (19; 44). The literature has also provided evidence that peer coaching facilitates skill transfer to the teaching environment(21; 51; 53). A recent meta-analysis of peer coaching in primary education demonstrated improved instructional and achievement outcomes (33). However, the literature in medical education does not yet demonstrate instructional outcomes or learner achievement outcomes for peer coaching (6; 63).

PURPOSE AND RESEARCH QUESTIONS

While peer coaching is viewed as an effective form of workplace faculty development in related fields, there is a paucity of published literature in medical education that describes how peer coaching programs are designed and implemented. Currently, it is unclear what program processes and characteristics are essential for

learning to take place. This gap risks faculty developers recreating initiatives that proved to be unsuccessful. Additionally, for peer coaching participants and their learners this gap may translate to sub-optimal training experiences.

This thesis aims to answer the following questions:

1. What are the characteristics of peer coaching initiatives at North American medical schools?
2. What are the best practices of peer coaching to optimize teaching effectiveness for medical educators?

By answering these questions, we aim to create a shared mental model to aid faculty developers in designing and implementing effective peer coaching programs. We recognize that peer coaching is multi-faceted, but for the purpose of this thesis, we focused on initiatives that included peer observation of teaching in the workplace (a form of experiential learning), feedback, and collegial exchange (peer dialogue and reflection on teaching) as these facets have been defined as key components of teaching effectiveness (60; 61).

Chapter 2 provides details of our first study which answers our first research question by identifying the characteristics of present-day peer coaching initiatives. This website review was designed to synthesize knowledge across multiple peer coaching initiatives. By identifying, examining, and conceptually mapping common characteristics across multiple initiatives, we provided faculty developers with examples to support initiative development and future research.

We provide details of how we answered our second research question in Chapter 3. We conducted a focus group with seven peer coaching initiative faculty developers.

This focus group, which utilized nominal group technique, was designed to build expert consensus on a list of best practices of peer coaching for medical educators that optimize teaching effectiveness. Together, the expert participants generated a list of 64 ideas which were consolidated into 17 best practices that serve as a practical resource for faculty developers. Additionally, the process of consensus building fostered collaboration and identified areas for future research.

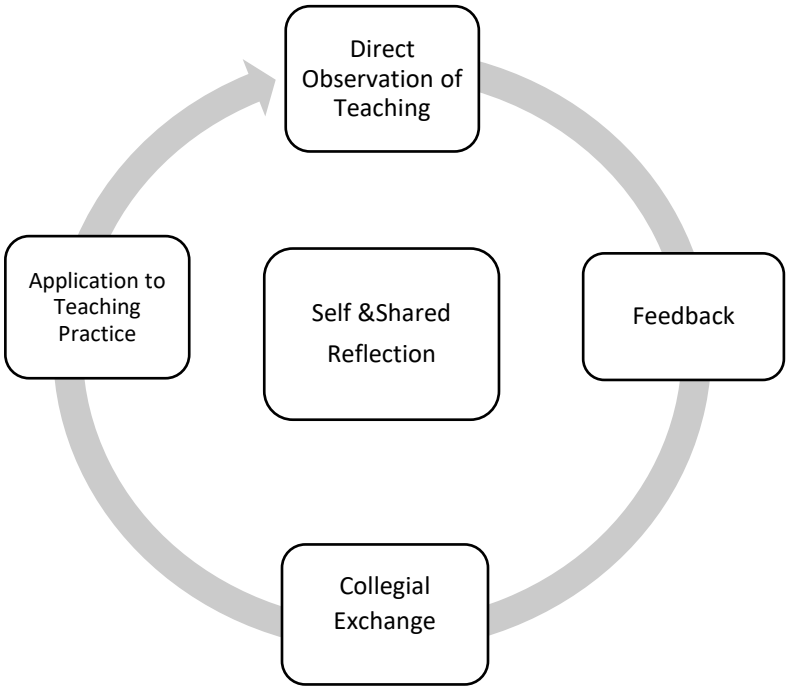
THEORETICAL FRAMEWORK:

The aim of this thesis was to create a conceptual model for faculty developers who are interested in designing and implementing a peer programs for medical educators. To start, we needed to explore relevant theories in order to build a conceptual framework of how educators learn through peer coaching. While there are many relevant theories, our explorations are informed by the Theory of Deliberate Practice (Ericsson *et al*) and Kolb's Experiential Learning Cycle (17; 32). These two theories help illuminate what transpires during a peer coaching session and how learning takes place. Ericsson's theory explained the importance of direct observation of teaching followed by immediate feedback, such that the learning task (peer coaching) should motivate the educator to improve his or her teaching practice (7). Additionally, the learning task should consider the educator's pre-existing knowledge, and it should allow for repeated skill repetition with immediate feedback. Finally, the learning task should vary across content areas (problem-based learning strategies, small groups, outpatient precepting) (7).

Meanwhile, by adapting Kolb's Experiential Learning Cycle to the peer coaching, we conceptualized learning as steps in a circular process. The first step, concrete experience, aligns with the direct observation of teaching (32). The next step, reflective

observation, corresponds to individual on the teaching experience (32). For peer coaching, this may involve a self-reflection by the observed educator during or after the session, or it can involve the peer coach reflecting on the observation as they observe and compile feedback. The next step, abstract conceptualization, corresponds to the provision of feedback and collegial exchange (32). The peer coach provides feedback on the teaching session, but also invites discussion on teaching practices. Reflections are shared, teaching strategies are discussed, and teaching dilemmas are addressed. Finally, active experimentation involves the co-creation of an action plan and goal setting for the next teaching session (32).

Figure 1: Peer Coaching as an Experiential Learning Cycle



Moving beyond conceptualization and towards identifying and synthesizing knowledge about peer coaching, we aimed to identify best practices. Billet's workplace

learning theory provided a unique lens to evaluate program characteristics and identify best practices. Billet studied workplace learning from a socio-cultural perspective (24). He sought to develop a workplace pedagogy that focused on the relationship between workplace affordances and individual engagement (4). Workplace affordances describe how the workplace provides the worker with opportunities to participate in activities or tasks, and how the workplace engages employees in social interactions (relationships). Through his research, Billet found that workers afforded the greatest opportunities to participate reported the strongest development (4). This theoretical framework helped to clarified our research questions and define best practices.

CHAPTER 2: GETTING BETTER TOGETHER: A WEBSITE REVIEW OF PEER COACHING INITIATIVES FOR MEDICAL EDUCATORS

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Key words: peer coach, observation, teaching, feedback, reflection

ABSTRACT

Phenomenon: Peer coaching is a form of faculty development where medical educators collegially work together to improve their teaching. Benefits include utilization of evidence-based teaching practices, promotion of collegial discussions, and reflection within the workplace teaching context. Some faculty developers have expertise in designing and offering peer coaching initiatives for medical educators. However, due to a paucity of reporting on these initiatives in the literature, this specialized knowledge is not readily accessible to the health professions education community. This gap hinders practice advancement and creates barriers for new initiative implementation.

Approach: The authors conducted a website review to identify, examine, and conceptually map characteristics of peer coaching initiatives at Association of American Medical Colleges accredited medical schools. Forty-five initiatives were included that maintained publicly accessible websites, performed direct observation of teaching with feedback, and had a stated purpose of improving teaching. Data collection included details related to initiative purpose, structure, participation, observation of teaching, feedback, and support of learning.

Findings: Most initiatives were voluntary and provided formative feedback with the sole purpose of improving teaching. Nearly all used a three-phase process with a pre-observation meeting for goal setting, direct observation of teaching, and a post-observation meeting with feedback. Many initiatives required peer coach training and expertise. Reflection, collaboration, confidentiality, and use of an observation instrument were frequently mentioned.

Insights: This website review provides faculty developers with a knowledge synthesis of how present-day peer coaching initiatives are structured and enacted—laying a foundation to collaborate, build best practices, and identify areas for future research. These findings enable faculty developers to learn from and build upon others' examples. Future research should explore whether there is an ideal coaching model and location for peer coaching within the higher-level organization. Additionally, researchers should seek to build consensus on initiative characteristics that enhance participation and foster teaching effectiveness.

Keywords: peer coach; observation; teaching; feedback; reflection

PHENOMENON:

Peer coaching initiatives are important components of comprehensive faculty development programs for medical educators (45). They encourage use of evidence-based teaching practices, promote collegial discussions, and encourage reflection within the workplace teaching context (13; 25; 51). Peer coaching is a faculty development approach that commonly includes direct observation of teaching, feedback, reflection, and collaboration with peers (6). It is distinct from summative peer review which is a performance evaluation associated with quality assurance and promotion and tenure (3).

While traditional faculty development initiatives are criticized for failure to improve instruction, peer coaching facilitates the transfer of knowledge and skills into workplace teaching practice (31; 33). It creates a sense of inquiry regarding pedagogic practices and promotes collaborative reflection on teaching performance (5; 37). In medical education, the literature provides evidence that peer coaching improves teacher satisfaction, confidence, collegiality, and skill transfer to the teaching environment (21; 44; 48; 51; 53). In the educational literature, peer coaching leads to improved knowledge, skills, and attitudes towards teaching (8; 27; 36; 47). A recent meta-analysis also demonstrated improved instructional and achievement outcomes (33).

Some faculty developers have expertise designing and implementing peer coaching initiatives for medical educators; however, there is a paucity of reporting on this process. The published literature discusses educational outcomes of individual initiatives, observation instrument validation, and surveys of attitudes and perceived barriers to peer coaching (1; 21; 41; 50; 51; 54). However, it does not provide a knowledge synthesis of current initiative characteristics. Additionally, two Twelve Tips

papers provide recommendations for peer observation and peer feedback, but they are limited to personal experience and a narrative literature review (42; 57). This gap hinders the advancement of peer coaching as a faculty development technique and creates barriers to initiative implementation and optimization.

This article aims to provide a knowledge synthesis of present-day peer coaching initiatives for medical educators as they are described on medical school websites. By identifying, examining, and conceptually mapping common characteristics across multiple initiatives, we will provide examples to support initiative design, implementation, and future research. We intend for this article to generate conversations and collaboration on best practices of peer coaching for medical educators. In this way, faculty developers interested in peer coaching can learn from the examples of others and get better together.

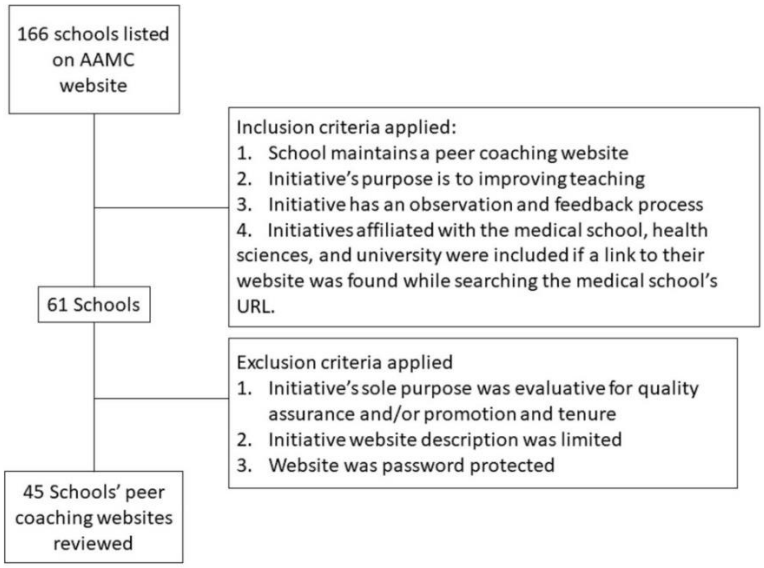
APPROACH:

We surmised that medical schools commonly use websites to promote and describe faculty development offerings, including peer coaching, as this was our experience within our own institution. We examined publicly accessible websites, as opposed to conducting individual interviews, as initiative information was readily accessible and allowed us to make comparisons across many schools. We defined peer coaching initiatives as faculty development activities designed to improve teaching through observation of teaching and associated feedback. We kept our definition broad because the literature did not provide a precise definition of a peer coaching initiative.

Additionally, there was definitional overlap with terms like peer observation of teaching, peer review, peer evaluation, and consultation on teaching (12).

We conducted the website review from December 2017 through March 2018. The primary investigator (AB) identified 166 North American medical schools from the Association of American of Medical Colleges' (AAMC) member directory. Medical schools were located within the United States and Canada. To identify peer coaching initiatives, she Googled each school's uniform resource locator (URL) in conjunction with the terms 'peer coaching', 'faculty development,' 'faculty affairs,' 'peer review,' 'peer observation,' 'peer evaluation' and 'consultation' in consecutive order until information was found. For example, she typed the following search strategy: 'faculty development' site: medicalschoolurl.edu. If after these search iterations, AB identified no information on peer coaching, the institution was excluded. If an initiative was identified, AB applied our inclusion and exclusion criteria (see Figure 1). We included peer coaching initiatives affiliated with universities and the health sciences only if we were directed to their websites from the medical school URL, and they provided peer coaching to medical educators.

Figure 1: Inclusion and Exclusion Criteria



Forty-five peer coaching initiatives were included in our website review. We identified, examined, and conceptually mapped key characteristics. For each initiative, we categorized website information under the following themes: basic demographic information, initiative purpose, organizational structure, participation details, observation process, and feedback process. Based on a review of the higher education literature, we determined that within peer coaching, learning is supported through collaboration and reflection (25; 37). Thus, we specifically searched for examples of these concepts by closely reading each website's content and searching it (using control F) for the terms: reflection OR shared OR exchange OR collaboration OR collegial. Finally, a recent systematic review of faculty development initiatives in medical education challenged future practice and research to promote workplace learning and foster community development (60). Therefore, we searched for evidence of communities of practice within

each website by closely reading and searching for the terms: community; community AND practice; community AND learner; community AND educator.

AB initially extracted data for each included program. Two co-investigators (HM and LM) subsequently reviewed the data and briefly summarized their overall impressions of the initiatives. Finally, AB reviewed each program again to ensure data consistency and alignment with overall impressions. For areas of disagreement, all investigators met and discussed concerns until consensus was reached. Results were tallied and reported using descriptive statistics.

FINDINGS:

We identified 45 websites of peer coaching initiatives affiliated with US and Canadian medical schools. Supplemental Table 1 provides detailed information for each initiative, including links to initiative websites and several observation instruments. Of note, some links may no longer be active as schools frequently update their websites.

Supplemental Table 1: Data extraction sheet

Link: https://figshare.com/s/adb3cc7ad6970df8c95d

Initiative Purpose:

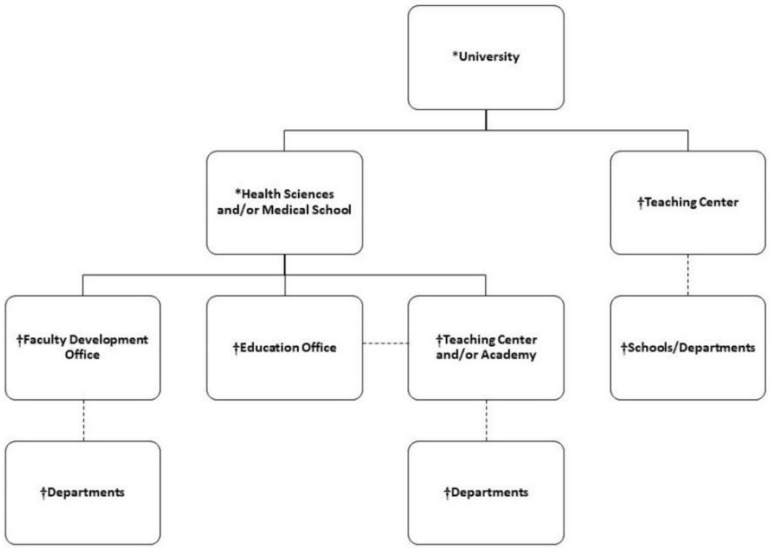
Thirty-four initiatives had only one stated purpose, to improve educator teaching practice. Ten initiatives had a secondary purpose to evaluate teachers on their performance and support decisions on promotion and tenure. Documentation from the Courage to Teach peer review process at Ohio State University College of Medicine was available to support promotion and tenure. In contrast, the University of Arizona College of Medicine campuses at Phoenix and Tucson had two separate protocols, one to improve

educators' teaching skills through formative feedback, and one to provide a teaching evaluation for annual review. One initiative, Coaching for Teaching Excellence at Perelman School of Medicine, was designed to identify struggling educators and remediate them.

Organizational Characteristics:

Organizational structure included the highest level of organizational affiliation (university, health sciences, medical school) and the initiative location within the higher-level organization. These characteristics infer potential support relationships like funding, manpower, advertising, and space allocation (see Figure 2). Although, we were unable to determine a direct reporting structure based on the information available on each website, in general, 28 peer coaching initiatives were directly affiliated with the medical school, 12 with the university, and 5 with the health sciences.

Figure 2: Organizational Structure



Key:
*Peer coaching initiatives may be affiliated with the university, health sciences, and/or medical school.
†Peer coaching initiatives are situated within these locations.
--The dashed lines represent potential support relationships.

Sixteen initiatives were located within a faculty development office, 12 within a teaching academy, and 10 within a teaching center. For example, the initiative at Virginia Tech Carilion School of Medicine is housed within the Teaching Excellence Academy for Collaborative Healthcare. Four initiatives were located within a teaching center or faculty development office but supported individual initiatives located within schools and/or departments. For simplicity, we categorized them as department level initiatives. An example was the Peer Coaching, Observation, and Mentoring initiative at McMaster University Faculty of Health Sciences. This initiative aids schools and departments interested in developing and launching peer observation and coaching initiatives. It provides a website toolkit, training resources, and a certificate program for observers.

Most peer coaching initiatives described themselves as programs (n=22) or consultation services (n=15). The four initiatives that provided support to schools or departments were categorized separately. Peer coaching was a membership requirement

for Georgetown University Medical Center's Teaching Academy for the Health Sciences. Meanwhile, three initiatives did not fit into a defined category. For example, Harvard School of Medicine had an Interest Group in Peer Observation of Teaching situated within its teaching academy.

Participation:

Participation characteristics included whether participation was voluntary or required, what type of medical educator was eligible to participate, peer coach expertise, and training requirements (see Table 1). Most initiatives were voluntary (n=33), but several required certain types of educators to participate or offered both voluntary and required options for participation. For example, the University of Florida College of Medicine at Jacksonville's initiative required all new teaching faculty to participate. Similarly, the University of New Mexico School of Medicine's initiative required educators to participate if they were earning a teaching certificate. Meanwhile, Indiana University School of Medicine's Peer Review of Teaching program paired voluntary participation with formative feedback to improve teaching and required participation with summative evaluation for promotion and tenure.

Table 1: Characteristics of Participation

Category	Characteristic	# of schools (% of 45)
Was participation described as voluntary or required?	Voluntary	33(73%)
	Both (voluntary and required components)	6(13%)
	Required	3(7%)
	Not specified on website	3(7%)
What type of medical educator was eligible to participate?	Teaching faculty	35(78%)
	Restricted eligibility	5(11%)
	Teaching faculty and other	4(9%)
	Not specified on website	1(2%)
Was the peer coach considered an expert or true peer?	Expert	26(58%)
	Not specified on website	10(22%)
	Both (expert and true peer)	5(11%)
	True peer	4(9%)
Was the peer coach trained?	Trained	35(78%)
	Not specified on website	6(13%)
	Both (trained and untrained)	4(9%)

Most initiatives invited all teaching faculty to participate (n=35), but several initiatives also invited graduate students, post-doctoral students, residents, and/or academic leadership (n=4). For example, the University of Michigan Peer Review of Teaching program provided additional consultation on leadership roles to department chairs, associate deans, and faculty committees. Five initiatives restricted eligibility to a specific type of medical educator. For example, the Faculty of Medicine and Dentistry Peer Consultation for Teaching Program at the University of Alberta focused only on clinical teachers.

Many initiatives (n=26) considered their peer coaches to be "expert" educators. The term "expert" referred to a coach with many years of teaching experience, or a coach who had undergone extensive training in peer observation and feedback. Four initiatives used "true peers" as coaches. A "true peer" referred to an educator with similar

training and teaching responsibilities to the observed educator. These initiatives allowed educators to participate in both the role of the peer coach and observed educator. Finally, five initiatives included both expert educators and true peers. For example, the Peer Evaluation of Teaching program at the University of Arizona College of Medicine Tucson specified that "true peers" could provide formative peer coaching, but summative evaluation required "expert" peer coaches.

Thirty-five initiative websites mentioned peer coach training. Several initiative websites provided training details which included workshop attendance and/or completion of online modules. Finally, several initiatives required peer coaches to complete a teaching certificate program. For example, the Teaching Consult Service: Peer Assessments of Teaching initiative at George Washington University School of Medicine and Health Sciences utilized graduates of the Master Teacher Leadership Development Program.

The Observation Process:

Characteristics of the observation process included documentation of a pre-observation meeting, details of the observation process, use of an observation instrument, and number of observations required or allowed (see Table 2). Most initiatives had a pre-observation meeting that occurred prior to the direct observation (n=30). This meeting typically occurred in person and lasted 30 to 60 minutes. During the meeting, the observed educator and the peer coach identified focus areas for the observation and set teaching goals. The meeting was also used to discuss the observation process, the observation instrument, and the feedback process.

Table 2: The Observation Process

Category	Characteristic	# of schools (% of 45)
Was there a pre-observation meeting?	Yes	30(67%)
	Not specified on website	15(33%)
What was the observation setting?	Classroom	35(78%)
	Clinical	20(44%)
	Not specified on website	10(22%)
	Online	5(11%)
What type of observation instrument was used?	Not specified on website	27(60%)
	Generic form	7(16%)
	Specific form based on observation location	6(13%)
	Modifiable form based on observed educators' needs	3(7%)
	Specific and modifiable forms	2(4%)
How many observations were required or allowed?	Not specified on website	32(71%)
	One	4(9%)
	Two	3(7%)
	Multiple	4(9%)
	Other	2(4%)

Most initiatives did not provide a detailed description of the observation process on their websites. For initiatives that provided details, the observation period lasted from 50 to 90 minutes. Two initiatives mentioned the observer should be unobtrusive, and one mentioned being discrete. Three initiatives discussed videotaping the observation for review during the feedback session. Finally, several initiatives offered to review additional materials. For example, the Formative Peer Review of Teaching Program through the University of British Columbia provided feedback on teaching materials, the philosophy of teaching statement, teaching portfolios, and student course comments. Eighteen initiatives reported use of an observation instrument. Table 2 provides details related to these instruments.

Several initiatives specified the number of observations required or allowed for each participant. Two schools had specific observation requirements and were categorized as Other. For example, the University of Arizona College of Medicine at Tucson's Peer Evaluation of Teaching program required two or more observations for summative evaluation but did not specify the number of formative observations required. On the other hand, Mercer University School of Medicine's Tutor Development Program required one observation every three years.

The Feedback Process:

For the feedback process, we reported on the implications of feedback, whether feedback was confidential, if there was a separate post-observation meeting to provide feedback, and in what form feedback was given (see Table 3). Although formative feedback was most common, the University of Central Florida College of Medicine Peer Evaluation program provided summative feedback only. Seventeen schools stressed the importance of confidentiality related to the feedback process. Providing feedback during a post-observation meeting (n=35) in both oral and written form (n=24) was most common. Finally, several schools provided feedback from additional sources. For example, the Teaching Observation by Peers (TOPs) program at the University of Arkansas for Medical Sciences offered the observed educator optional feedback from a student focus group.

Table 3: The Feedback Process

Category	Characteristic	# of schools (% of 45)
What were the implications of feedback?	Formative	32 (71%)
	Both (formative and summative)	6 (13%)
	Formative, but may also use as documentation for dossier/promotion requirements	3 (7%)
	Not specified on website	3 (7%)
	Summative	1 (2%)
Was confidentiality mentioned on the website?	No	28 (62%)
	Yes	17 (38%)
Was there a post-observation meeting?	Yes	35 (78%)
	Not specified on website	10 (22%)
In what format was feedback given?	Both (oral and written)	24 (53%)
	Not specified on website	14 (31%)
	Oral	7 (16%)

How Learning is Supported:

Evidence of reflection and collaboration was collected as prior research demonstrated a learning benefit (5; 37). Additionally, we identified initiatives that sought to create communities of practice. Twenty-two initiatives mentioned reflection, 16 collaboration, and 7 communities of practice. An example was the Peer Coaching Program on Teaching and Mentoring at Stanford University School of Medicine. The initiative website states their program offers the following benefits: … "allows participants to create stronger ties with colleagues and enhances the community of educators in Stanford Medicine, encourages reflection and analysis of teaching practices."

Several initiatives provided examples of how they engaged the medical educator and peer coach in reflection and collaboration. Activities included guided self-reflection

exercises, developmental action plans, and follow-up sessions. For example, the University of Colorado School of Medicine iTeach Peer Mentoring for Faculty initiative required the observed educator to complete a self-reflection on his or her teaching and review it with a mentor (coach) during the pre-meeting. In contrast, the Instructional Consultation Program at Texas A&M Health Science Center College of Medicine had participants complete a post-observation reflective summary. This initiative also had the peer coach work with the instructor on a developmental action plan and offered ongoing follow-up meetings to track the educator's progress.

INSIGHTS:

Many of the identified peer coaching initiatives were located within an office of faculty development, teaching academy, or teaching center. These entities consolidate faculty development resources and teaching expertise creating ease of access to materials for medical educators. Additionally, they recognize and reward teaching which is a factor that may motivate educators to participate (62). Nevertheless, within these locations, a peer coaching initiative may become impersonal and lost in the vast array of available faculty development initiatives(5). Blackwell argues that peer coaching initiatives in higher education should be located at the department level to give educators a sense of ownership through program development and implementation(5). Pierce *et al* (51) provide an example of department level implementation. Within our review, several schools promoted peer coaching at the department level while providing higher-level institutional support with training and materials. Future research should explore whether

there is a preferred location for peer coaching within the higher-level organization, or whether it should be context dependent.

Nearly all peer coaching initiatives followed a three-phase process for peer observation similar to the one proposed by Martin and Double (37) which consists of a pre-observation meeting, direct observation, and a post-observation meeting with feedback. This model defines and moderates interactions between the peer coach and participating educator. It also promotes reflection and supports ongoing collaboration (37). While this may be an optimal model, it is time consuming as it requires three separate meetings and a 2-3-hour time commitment. Several studies identified that time constraints were considered a significant barrier to participation (1; 21; 50). To address these barriers, some institutions have implemented creative solutions. For example, Stanford's initiative has options for video coaching and phone meetings. A recent meta-analysis on the effectiveness of workplace coaching found blended techniques like these as effective as face-to-face methods, but further research is needed (29).

Most initiatives were voluntary and provided formative feedback. Many initiative websites also mentioned the importance of confidentiality. The literature provides some evidence as to why these characteristics are important. In one survey, General Practice teachers were skeptical of peer coaching initiatives with competing aims of teacher development and quality assurance as they feared scrutiny (1). To overcome fears of evaluation, another study successfully promoted formative feedback and collegiality (44). Offering voluntary participation may provide similar reassurance (11). Likewise, several researchers have identified confidentiality as one of the most important characteristics for

fostering trust of peer coaching (11; 22). Future research should examine if utilizing a confidential process to provide formative feedback improves participation rates for voluntary peer coaching initiatives.

When peer coaching was originally introduced to medical education, institutions followed a reciprocal coaching model (19). However, most of the initiative websites we reviewed followed an instructional coaching model. Reciprocal coaching pairs educators of equal status and each assumes the role of the peer coach and observed educator. Educators share teaching experiences and collaborate, usually repeatedly over a specified timeframe (13). Meanwhile, instructional coaching utilizes educational experts who coach participants on research-based teaching practices and their implementation (13). While important, this model requires extensive training and organizational support (10). Several authors in the educational literature argue teachers derive different benefits from reciprocal and instructional peer coaching models, and an ideal initiative would contain both (10; 13). Our search strategy identified initiatives affiliated with higher-level organizations, which may explain the tendency toward instructional coaching. These contexts are more likely to have organizational support. Future research should explore reciprocal coaching initiatives at the department level and determine whether there is an ideal coaching model for medical educators. A comprehensive program evaluation of a peer coaching initiative by Garcia *et al* (21) provides an example of how this may be accomplished.

Finally, this review indicates that many present-day initiatives are attempting to incorporate reflection and collaboration into their design. Furthermore, several initiatives are aiming to foster communities of practice for medical educators. Based on literature

from higher education and medical education, these characteristics have been shown to support learning, including that which occurs in the workplace (5; 37; 60). Thus, we suggest that these initiatives provide faculty developers examples of peer coaching that warrant replication.

Limitations:

Our website review has several limitations. First, it is possible not all peer coaching initiatives have a web presence, and thus, we may have inadvertently excluded initiatives advertised locally through word of mouth, e-mail, posters, etc. Second, our results are based on our interpretation of the information presented on each website which may not accurately reflect current initiative practices due to misinterpretation or outdated information. Third, we limited our website review to AAMC accredited medical schools. The common characteristics we identified may not apply to institutions outside of North America. Finally, it was not possible to assess the quality of the initiatives based on website review. We had no means to assess instructional outcomes or student achievement outcomes.

Conclusion:

In this website review, we provide a knowledge synthesis of present-day peer coaching initiatives to enable faculty developers to learn from and build upon others' examples. A recent systematic review of faculty development initiatives in medical education challenged future practice and research to promote workplace learning, foster community development, and secure institutional support (60). Our findings suggest that

peer coaching initiatives are accepting this challenge. Nevertheless, peer coaching for medical educators remains understudied as a form of faculty development. Future research should explore whether there is preferred location within the higher-level organization to situate these initiatives, and whether there is an ideal coaching model. Additionally, researchers should build consensus on initiative characteristics that enhance participation and foster teaching effectiveness.

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Conflicts of Interest: None

CHAPTER 3: ON THE SAME PAGE: BUILDING BEST PRACTICES OF PEER COACHING FOR MEDICAL EDUCATORS

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ABSTRACT:

Introduction: Peer coaching is a faculty development approach that improves teaching practice. Elements include peer observation of teaching, feedback, and collegial exchange. Peer coaching supports reflection on teaching, cultivates workplace learning, and fosters learning cultures. Yet, limited resources are available to guide faculty developers in designing and implementing peer coaching initiatives. This gap may lead to initiatives that fail to optimize teaching effectiveness.

Methods: The authors convened a focus group of seven participant experts, via video-teleconference, to arrive at consensus on best practices of peer coaching for medical educators. The focus group utilized Nominal Group Technique, a consensus building methodology. Process steps included an introduction, silent idea generation, idea sharing, group discussion, and voting. Consensus was reached with over 50% agreement. Data were qualitatively analyzed using inductive content analysis, and quotes were extracted to support the identification of best practices.

Results: Seventeen best practices were identified. All participant experts recommended a framework for the peer observation process including a pre-observation meeting and post-observation debrief. The participant experts stressed the importance of confidentiality and behaviorally-based feedback. To promote collegial exchange, most agreed peer coaching should be a formative process conducted in an environment that is safe and nonthreatening. Finally, peer coaching should be supported at multiple levels within an organization.

Conclusion: Expert consensus generated 17 best practices of peer coaching for medical educators that optimize teaching effectiveness. The results provide a practical resource

for faculty developers. Future researchers should explore common pitfalls and barriers to the implementation of peer coaching initiatives from the perspectives of academic leadership, peer coaches, and observed educators.

Keywords: peer coach, faculty development, observation, feedback, collegial exchange, nominal group technique

INTRODUCTION:

Peer coaching is a faculty development approach in which educators collegially work together to improve teaching practice (28). Research demonstrates that peer coaching promotes reflection and collaboration on teaching (18; 25; 37; 51). Moreover, peer coaching cultivates workplace learning and fosters positive learning cultures (4; 13; 28). Despite these benefits, there are few resources to guide faculty developers in peer coaching initiative design and implementation for medical educators (43; 57; 60). This gap may lead to initiatives that fail to improve teaching practice.

Direct observation of teaching with associated feedback and collegial exchange are common components of peer coaching (6; 28). Direct observation may occur in classroom or clinical settings (e.g., outpatient clinic, inpatient ward, operating room) (35; 41; 51; 54). Peer coaching can involve an expert-to-novice, instructional coaching style or a peer-to-peer, reciprocal coaching style (13; 28). By encouraging reflection on teaching and dialogue surrounding instructional strategies and teaching challenges, peer coaching promotes collegial exchange (42; 51). Through this process, educators gain new perspectives on teaching and attain motivation to change (10).

Peer coaching offers a host of benefits for participants. For example, participating in peer coaching has been linked to improvements in teacher satisfaction, increases in self-efficacy, and promotion of skill transfer to the teaching environment (18; 21; 44; 48; 51; 53). Additionally, studies indicate a learning benefit to the peer coach (18; 51). Specific to medical education, peer coaching aligns with suggestions to conduct faculty development activities in the workplace and to create opportunities to promote communities of practice. Both of which have been shown to be beneficial (45; 60). As a

faculty development approach, peer coaching may also include consultation on teaching practices, such as curriculum design and assessment, and/or it may be used to support faculty roles in leadership development and research (6).

Despite these benefits, there are limited resources to assist faculty developers in designing and implementing peer coaching initiatives in medical education. For example, published literature often describes individual peer coaching initiatives and outcome measures, but the findings lack generalizability (18; 21; 44; 48; 51; 53). There are two studies evaluating physician perceptions of peer observation prior to implementing an initiative, however, researchers have not conducted follow-up studies to assess whether participants' perceptions changed and why. From a practical standpoint, two "Twelve Tips" articles have been published that provide advice for individual components of peer coaching including peer observation of teaching and providing feedback to peers (42; 57). While valuable, these articles did not examine peer coaching initiatives holistically or draw on multiple expert opinions.

The lack of consensus on peer coaching processes and characteristics that optimize teaching effectiveness may result in recreating initiatives that prove to be ineffective. Our study aims to answer: What are the best practices of peer coaching that optimize teaching effectiveness for medical educators? By answering this question, we seek to provide faculty developers with a practical resource to build effective initiatives, collaborate, and identify areas for future research.

METHODS:

We convened a focus group guided by a constructivist paradigm to determine best practices of peer coaching for medical educators. The Uniformed Services University of

the Health Sciences (USU) institutional review board declared this study exempt from further review (Protocol Number: T0839444).

Methodology:

To structure the focus group, we used Nominal Group Technique (NGT), a consensus building methodology. We selected NGT because it promotes equal representation among group members and creates an environment that fosters collaboration (26). Steps in the NGT process include an introduction and explanation of the purpose of the focus group, silent idea generation, sharing ideas, group discussion, and voting and/or ranking of ideas (52). Upon conclusion of the voting, consensus results are immediately available to share with the group (52).

Sample:

AB invited 45 North American medical school faculty developers with expertise in developing and/or leading peer coaching initiatives to participate. This sample was based on a website review that identified all peer coaching initiatives in North America with a web presence. Participant experts' names and contact information were obtained from each school's website, and they were contacted via email. Twelve faculty developers acknowledged an interest in participating, and of those, seven were available to participate in our focus group at the scheduled date and time.

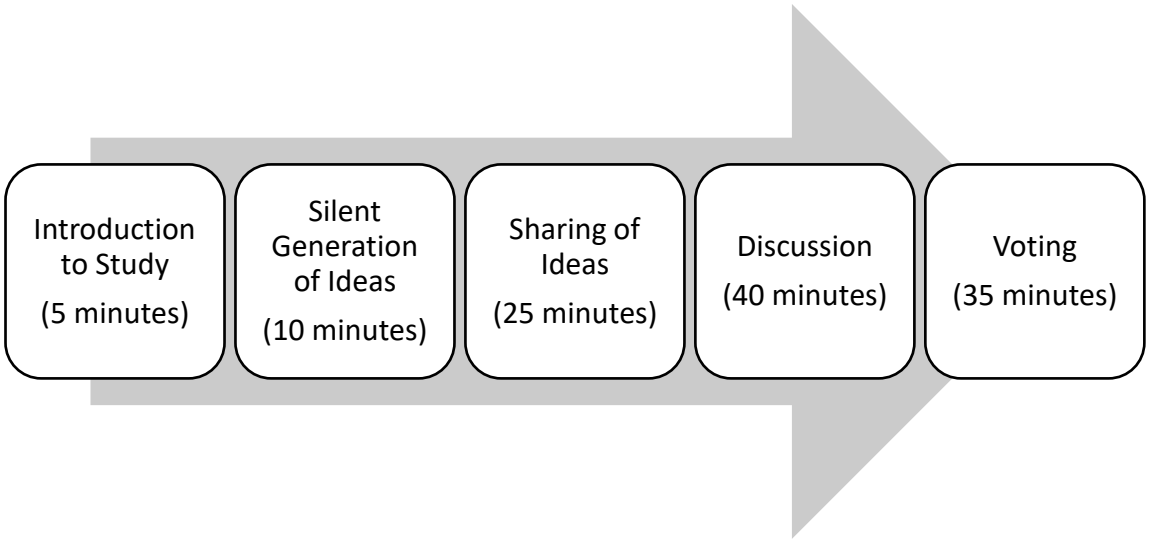
Process:

We conducted a pilot NGT to test our online platform and study materials with faculty and health professions education students at USU. Feedback from the pilot was

used to refine our focus group questions and voting methods. Throughout the study, we used the video-teleconference software Adobe Connect (San Jose, CA).

We held the focus group on 10 May 2018 over a 2-hour period. AB led the meeting and was assisted in-person by HM and LM. Throughout the process, participant experts communicated via video, audio, and chat functions within Adobe Connect. To orient participant experts prior to our study, we provided a handout and made a brief presentation that reviewed our research aims and NGT methodology (Figure 1).

Figure 1: Steps of the Nominal Group Technique



Participants were presented with our definition of a best practice: 1) it is a standard component of a peer coaching initiative 2) that optimizes teaching effectiveness. Then, participant experts were asked a series of focus group questions that we derived from the literature and our website review (Figure 2) (6; 28; 30). We considered collegial exchange synonymous with collaborative reflection (37). It involves a trusting collegial relationship where peer coaching partners reflect together on challenging teaching situations and collectively develop strategies to overcome them (37; 56).

Figure 2: Focus Group Questions

Focus Group Questions

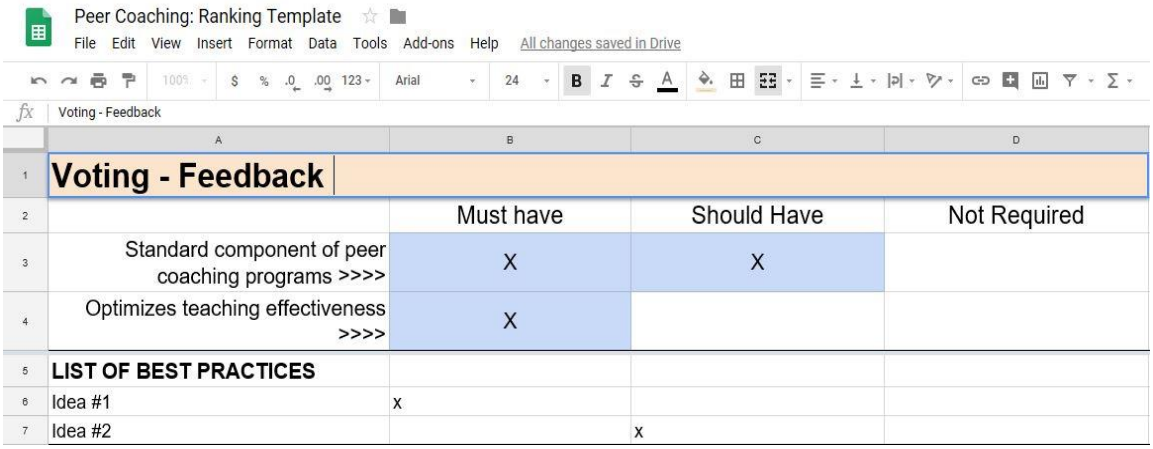
Think about these three components of peer coaching and list up to three best practices for each:

1. **Peer observation of teaching**
2. **Feedback**
3. Ideal environmental conditions for fostering **collegial exchange**

During silent idea generation, participant experts individually wrote down answers to the focus group questions. Then, they shared key ideas (individual answers to focus group questions) with each other in a round robin format. Key ideas were categorized under peer observation of teaching, feedback or collegial exchange and displayed in Google Sheets (Mountain View, CA) for all participant experts to view in real-time. Next, they discussed key ideas within each category with the intention to consolidate similar ideas and to add new ideas if necessary.

Finally, participant experts voted to determine which key ideas qualified as best practices. Consensus was considered >50% agreement on a key idea. Voting options included Must Have (Best Practice), Should Have, and Not Required. Figure 3 provides an example of our voting spreadsheet. Voting occurred anonymously using the Adobe Connect voting feature. If a vote resulted in a tie, a re-vote was cast once all key ideas were voted on within a category. Voting results were shared with the group in real-time.

Figure 3: Example of Voting Spreadsheet



	A	B	C	D
1	**Voting - Feedback**			
2		Must have	Should Have	Not Required
3	Standard component of peer coaching programs >>>>	X	X	
4	Optimizes teaching effectiveness >>>>	X		
5	**LIST OF BEST PRACTICES**			
6	Idea #1	x		
7	Idea #2		x	

Data processing and analysis:

We applied a qualitative approach to data processing and analysis. Following the focus group, AB de-identified the data, transcribed the audio of the focus group and combined it with the video-teleconference chat log to further contextualize participant experts' responses. Within each category, the list of key ideas was organized based on voting results (Best Practice, Should Have, Not Required). These listings were then read multiple times, discussed by all members of the research team, and analyzed using inductive content analysis to verify information collected during the focus group (49; 52). Similar ideas were grouped and checked against transcript and chat log data during both the sharing of ideas and discussion steps of the NGT process. Using an iterative approach, similar ideas were combined, and a final list of best practices was created. Quotes were extracted to explain individual and group thinking (52).

During data analysis, we realized that 11 key ideas (two from the feedback category, and nine from collegial exchange) were not voted on due to a technical malfunction within our voting spreadsheet. A second meeting with four participant

experts, and individual meetings with three remaining participant experts were conducted from December 2018 to January 2019 to finalize voting on the 11 remaining key ideas. The sessions were also conducted using Adobe Connect technology and lasted 30 minutes. First, we reintroduced the study information including definition of a best-practice and research questions. Then, participant experts silently voted on the 11 remaining ideas, and each meeting concluded with a brief presentation of our preliminary results. We considered this process a continuation of our original focus group as it included the same participant experts, and no idea generation or discussions took place.

Our research team did not have pre-existing relationships with the participant experts. Additionally, we had no previous experience developing or managing peer coaching initiatives that might have influenced our data gathering or analysis. However, we acknowledge that findings from our website review may have influenced data interpretation and analysis. An audit trail was maintained to enhance trustworthiness.

RESULTS:

We conducted a focus group with seven faculty developers representing peer coaching initiatives at seven medical schools across the United States. Together they generated and voted on 64 key ideas. Forty key ideas were considered best practices. Then, through data analysis, the list was consolidated into 17 best practices of peer coaching for medical educators that optimize teaching effectiveness (Table 1). Best practices are presented within the categories of peer observation of teaching, feedback, and collegial exchange. Of note, during the discussion stage of the NGT, we observed that participant experts were eager to share experiences and findings from their own institutions, and they seemed interested in future collaboration. Additionally, we found

that video-teleconference provides a feasible way to conduct a focus group using NGT. In the results and discussion that follows, the peer coach is the medical educator who is observing the teaching session, and the observed educator is the medical educator being observed.

Best Practices:

Peer Observation of Teaching

For peer observation of teaching, participant experts unanimously agreed that the peer observation process must have a framework. Suggested elements of the framework included a pre-observation meeting, the direct observation, a post-observation debrief, and a self-assessment. Participant experts felt that the pre-observation meeting was useful to negotiate goals for the observation. At this meeting, the peer coach gains a better understanding of what the observed educator wants to address during the teaching observation. Simultaneously, this meeting provides peer coaches with the opportunity to explain their role during the observation process. For example, they may address that they do not participate in teaching. Peer coaches may also communicate that it is important for the learners to understand they themselves are not being evaluated by the peer coach. A separate post-observation debrief should occur soon after the observation. During the debrief, the peer coach provides feedback to the observed educator. Reflection and collegial discussions on teaching occur. Finally, the self-assessment, which could be performed before or after observation, had several uses. When undertaken before the observation, it helps the educator identify learning needs and goals for the teaching session. Alternately, self-assessment following the observation provides a formal opportunity for the educator to reflect on the teaching session.

Feedback

All participant experts felt oral and written feedback should remain confidential. Participant experts also indicated that peer coaches should be trained to deliver timely, specific feedback, that is behaviorally based. Examples of teaching behaviors should be provided as well as constructive suggestions for how to change the behavior. Participant experts agreed that peer coaches should be trained to deliver feedback as a dialogue, encouraging conversations on teaching. Finally, they recommended that the peer coach help the observed educator create a developmental action plan based on the feedback provided, and goals should be developed for the next teaching session.

Collegial Exchange

The best practices for collegial exchange described ideal environmental conditions to foster collegial exchange. Participant experts recommended that faculty developers create an environment that is perceived to be safe, respectful and non-threatening. The environment was considered both a physical and emotional space. For example, one expert felt the physical space should be private to foster collegial exchange. Emotionally, educators needed to perceive the peer coach as trustworthy, honest, credible and desiring to help. One expert said: "There has to be a culture of psychological safety...having a trusted colleague and potentially encouraging reciprocal observation to help set up that feeling."

Participant experts also recommended creating a culture focused on improvement, growth and mastery. To accomplish this, they felt peer coaching initiatives should have clear objectives that utilize a formative assessment process to develop the educator, not

evaluate them. For example, one participant remarked: “I agree with putting formative in the culture (collegial exchange). It’s what needs to occur at an institutional level to support the idea of coaching for growth and mastery." Participant experts recommended participation be voluntary—driven by self-motivation to improve in certain areas of teaching. Additionally, participant experts felt that peer coaching should contribute to a larger professional development plan for the educator. Finally, participant experts agreed that peer coaching must be supported at all levels within an organization to foster collegial exchange and to create a cultural acceptance of peer observation.

Table 1: Seventeen Best Practices derived from expert consensus and written for faculty developers

	Best Practice	**Selected Illustrative Quotes**
Peer Observation of Teaching	1. Plan a pre-observation meeting to negotiate goals for the teaching session 2. Ensure the peer coach’s role during the observation is understood 3. Plan a post-observation debrief to provide feedback 4. Implement a self-assessment strategy 5. Implement a standardized training process for peer coaches	“I had timing of the events, um which means making sure that you have to schedule a pre-meeting, a post-meeting, and the lecture/observation time.” “The role of the observer in the learning session needs to be defined. So, they do not participate in the teaching and the learners understand they’re not being evaluated.” “To me it makes sense to have self-assessment as the fourth piece of the observation process.”

Feedback	6. Maintain confidentiality of feedback Train peer coaches to do the following: 7. Provide behaviorally-based feedback 8. Encourage dialogue 9. Provide specific feedback 10. Provide timely feedback 11. Help medical educators develop a behaviorally-based action plan and define teaching goals to work toward	"It needs to be a confidential process...the forms and whatever paperwork that comes out of it only is seen by the observer and the teacher." "It's fact-based and not subjective. Behaviors that can be changed and giving examples of behaviors." "I said that the person giving the feedback should facilitate a discussion through dialogue. So, kind of facilitating a conversation as opposed to spewing observations."
Collegial Exchange	12. Create a culture that emphasizes improvement, growth and mastery of teaching skills 13. Utilize a formative assessment process 14. Create an environment that is perceived as safe, non-threatening, and respectful 15. Make participation voluntary 16. Select peer coaches who are trustworthy, honest, credible, and desire to help 17. Garner support for peer coaching at all organizational levels (department, medical school, university)	"…that mastery or growth-oriented mindset. Meaning there's this idea that we all can improve." "I consider peer observation to be, always a formative process. If it's summative, for me that leads me into thinking that it's going to be associated with promotion, tenure, or some other evaluation." "Create a safe environment to elicit feedback, and so this is all non-punitive, it's to grow the educator, and it should be made clear." "I think it needs to be supported not just at the level of your department, but the level of either your medical school or university. So, it needs to be more of the vertical levels of support."

Should Have and Not Required:

While not considered best practices, the voting process also identified key ideas that participant experts considered 'Should Have' and 'Not Required.' We report these

key ideas in appendices as faculty developers may find them useful, and they may generate questions for future research. The ideas deemed as 'Should Have' were considered a standard component of a peer coaching initiative, but they did not optimize teaching effectiveness (Appendix 1). In particular, three key ideas contributed to significant discussion amongst participants: 1) the type of training and expertise required of the peer coach, 2) the use of observation forms, and 3) whether feedback should be generalizable. The key ideas deemed as 'Not Required' were not standard components of an initiative, and they did not optimize teaching effectiveness (Appendix 2). Key ideas focused on details related to reciprocal observation and whether faculty developers should assign peer coaches or let educators choose their own peer coach (either from a predetermined list or from peers within their own department or section).

DISCUSSION:

In the following sections, we draw attention to main points from the best practices within each category. Based on these best practices, we suggest several practical applications for faculty developers and highlight areas for future research.

Peer Observation of Teaching:

The participant experts emphasized the best practice of using a framework to structure the peer observation process. The use of an observation framework is well supported in the literature. The most frequently utilized framework is a 3-phase process model that includes a pre-observation meeting to set goals for the teaching session, direct observation of teaching, and post-observation feedback (37). Extending this model, the participant experts recommended integrating self-assessment, which is a practice

supported by the literature (21; 30), to promote reflection on teaching and/or set goals for the observation of teaching session. When discussing self-assessment, the participant experts were not prescriptive in how the self-assessments should be conducted (e.g., during the pre-observation meeting, during the post-observation debrief, in writing, orally). Future researchers might consider studying timing, modalities and structures for self-assessment to determine the most efficacious approach for peer coaching.

The participant experts advocated for standardized training of peer coaches but were not directive regarding exact details to be standardized. While there is some literature on peer coach training for medical educators (41; 57), it tends to focus at the individual level or in a specific domain (e.g., in simulated settings (9)). Furthermore, it provides limited guidance for faculty developers hoping to create program-level training plans that can be replicated and validated at other institutions. Additional challenges with creating a standardized training program include the influence of external stakeholders and the unique requirements of the teaching environment (e.g., clinical versus classroom settings). Despite these challenges, we propose it is possible to create a standardized training program for peer coaches. To accomplish this, we suggest faculty developers consider creating a peer coaching learning community similar to the American Association of Medical Colleges' (AAMC) Affinity Groups to foster collaboration, networking, and future research.

Feedback:

Feedback was a significant area of interest for our participants. Thus, we chose to focus on two best practices of feedback that participant experts underscored: maintaining confidentiality and providing behaviorally-based feedback. Maintaining confidentiality of

feedback reinforces to the observed educator that peer coaching is developmental and non-evaluative (2; 11; 23; 28). To maintain confidentiality, participant experts recommend conducting the post-observation debrief in a private location and securing all written feedback. Martin and Double suggest that confidentiality of feedback (both oral and written) should be discussed at the pre-observation meeting (37). If the peer coaching initiative requires documentation that coaching took place, observed educators must feel confident that this information will not result in an evaluation of their teaching. Huston and Weaver offer several recommendations on how to assess peer coaching initiatives while maintaining confidentiality (28). Finally, as digitization makes communication more efficient, faculty developers may look to online platforms to document participation and share feedback. We suggest considering a confidential web-based feedback system like SPARK that has proven effectiveness in other fields (20).

The best practice of providing behaviorally-based feedback aligns with recent recommendations for peer feedback and feedback in clinical education (34; 43). Participant experts recommended that faculty developers train peer coaches to focus the feedback discussion on observed teaching behaviors (preferably those identified by the observed educator during the pre-observation meeting). Newman, Roberts, and Frankl called this 'focusing feedback on teaching skills or methods' as opposed to feedback oriented to the person, and their article provides specific examples (43).

Collegial Exchange:

To encourage collegial exchange, participant experts identified several best practices (e.g., utilize a formative assessment process; encourage voluntary participation; create a safe, respectful, non-threatening environment) that foster trust within peer

coaching relationships. Trust is defined as: "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other (38)." Trust has been examined in the peer coaching literature (11; 16). For example, Eisen studied the peer learning partnerships of community college faculty and identified trust as the most essential aspect of the peer dynamic (16). In particular, the absence of hierarchical relationships, non-evaluative feedback, and voluntary participation helped equalize power relationships and contributed to trust building (16). Once trust is established within the peer coaching partnership, the observed educator is more likely to engage in collegial exchange which supports active experimentation and higher transfer of training to the teaching environment (56).

Designing peer coaching initiatives as voluntary, formative assessment processes separate from peer evaluation is supported by research in higher education and medical education (1; 23). Additionally, our participant experts felt that faculty developers should select peer coaches who are considered trustworthy, honest, credible, and convey a desire to help. These design elements and attributes foster trust, and establish a safe, non-threatening, respectful environment within which learning can take place (11; 14; 15). We suggest faculty developers thoughtfully consider how their peer coaching initiative is advertised. If participation is voluntary, how are faculty motivated to participate? Does the advertisement reflect the formative nature of the initiative? Additionally, faculty developers should consider re-evaluating their peer coach selection criteria to ensure they are actively searching for the aforementioned attributes within faculty performance reports, teaching portfolios, interviews, and letters of intent.

Limitations:

Our study was limited to only one focus group of faculty developers. Thus, we did not evaluate peer coaching initiative design and implementation from the perspectives of peer coaches, observed educators, or academic leaders. Nevertheless, the medical schools represented were geographically diverse, and this is the first study to our knowledge that promotes collaboration among experts in peer coaching for medical educators. The amount of time between focus group meetings may have altered voting patterns as the context of the idea sharing and discussion steps was missing. However, we did provide a handout and slides to remind participants of the research study design, best practice definition, and research questions. We also used the same Adobe Connect teleconference software and voting format to ensure participants were familiar with the technology and procedures. Finally, when participants required clarification of an idea, transcript material was presented to them provide context.

Conclusion:

Through expert consensus, we generated 17 best practices of peer coaching for medical educators that optimize teaching effectiveness. Our results provide a practical resource for faculty developers to utilize when developing peer coaching initiatives. In our efforts, we also demonstrated the feasibility of conducting a focus group using NGT with video-teleconference software. Moving forward, collaboration is needed to create a standardized peer coach training program that can be disseminated to multiple institutions. Additionally, exploring the perspectives of peer coaches, observed educators, and academic leaders may uncover diverging viewpoints that influence initiative design and implementation.

Take Home Messages:

- Through expert consensus, we generated 17 best practices of peer coaching that can be applied by faculty developers to create effective initiatives.
- The peer coaching process is supported by an observation framework that includes a pre-observation meeting, an observation, a post-observation debrief, and a self-assessment.
- Maintaining confidentiality of feedback, making participation voluntary, and utilizing a formative assessment process is important.
- Conducting a focus group using NGT is feasible with video-teleconference software.
- Future research should be collaborative and should seek to uncover divergent perspectives on initiative design and implementation.

Appendix 1: Key ideas that were voted as 'Should Have' by the participant experts

	Key Ideas	Selected Illustrative Quotes
Peer Observation of Teaching	• Help educators develop a reflective practice • Select peer coaches who are effective educators • Use a form to set goals for the teaching session and to frame the self-assessment • Use a structured form to focus the observation and generate feedback (it can be tailored to the teaching environment)	"I think forms are really helpful so that the observers have some type of shared mental model around what it is that are important or effective behaviors to be paying attention to." "We have forms that are for the classroom, we have forms that are for basic sciences, we have forms that are for the proceduralist...The reasons why we have varied forms is because we don't have content experts coming in to do the observation, and it's just helpful for those who don't fully understand that environment."
Feedback	• Begin by eliciting the 'frame' of educator using the Feedback with Good Judgement Model • Provide complimentary feedback • Make feedback generalizable • Select peer coaches with content knowledge • Provide the peer coach with knowledge and access to resources beyond their expertise to foster good conversations and promote effective feedback	Referencing Feedback with Good Judgement, "Why did you do it this way?" "Ah it should be complementary and focused on the things the faculty member did well. As well as evoking a sense of "we" as opposed to "you."" "The idea that it's not a single session with one observer as the whole basis for feedback." "I think that content expertise matters when there are very advanced learners." "It would be most helpful I think if the person observing has an idea of resources that are available, so that not only are there specific behavior changes being recommended, but perhaps resources that can be tapped into within that environment."

Collegial Exchange	• Include educators at multiple skill levels • Create a culture to adopt peer observation	"And I think it's really important that it include educators at multiple skill levels…I think it's important to have a culture to recognize where everybody can improve, and it's not just those who may be less experienced or in the midpoint in their career, but even those who are more senior can always do better in terms of their teaching." "Thinking about how you foster an environment where everybody is open to the peer observation process."

Appendix 2: Key ideas that were voted as 'Not Required' by the participant experts

	Key Ideas	**Selected Illustrative Quotes**
Peer Observation of Teaching	• Help the peer coach gain skills through the peer observation process • Schedule a follow-up observation	"... that the observer should gain skills in the process. In other words, it's not only driven on improving the skills of the person being observed." "And also, also there should be a follow-up observation. So, after the, the pre-meeting, the initial observation, there should be a follow-up observation as well"
Collegial Exchange	• Require all teaching faculty to participate in peer coaching--observing and being observed teaching • Create peer coaching pairs within departments/programs • Promote a sense of equality between the peer coach and educator (nonhierarchical) • Establish ongoing relationships between the peer coach and observed educator • Have the peer coach and observed educator watch a recording of teaching together • Assign the peer coach • Allow the observed educator to choose the peer coach	"We feel that observing and being observed is, is a key part of being a reflective teacher." "Another way for fostering collegial exchange is for departments or programs to set up peer observation coaching pairs within the department." Referring to the environment, "shows a sense of equality between the observer and observee, so not hierarchical." "Sometimes we'll use recordings, where actually teaching is being recorded and having an infrastructure for that, so that pairs can actually watch the teaching."

		"At our institution we have Academy members...and so we are training them as our initial peer observers, and that could be the list that we share with our faculty to choose from."

*No key ideas related to feedback were voted as 'Not Required' by the participant

CHAPTER 4: DISCUSSION

This thesis lays a foundation on which peer coaching initiatives can be designed and implemented. It identifies peer coaching processes and characteristics that optimize teaching effectiveness. Additionally, the findings serve as an exploratory step for future research. We intend for this research to encourage faculty developers to collaborate amongst programs-- sharing ideas, challenging norms, and ultimately maximizing the potential and outcomes for this form of faculty development.

The first study, a website review, synthesized knowledge across 45 peer coaching initiatives at medical schools in North America. Many initiatives had similar processes and characteristics, and they aligned with the peer coaching literature. For example, most used a three-phase process model for peer observation which included a pre-observation meeting to negotiate goals, a direct observation, and a post-observation debrief to provide feedback. Participation was usually voluntary and peer coaching was viewed a formative, confidential activity. Furthermore, most initiatives required peer coaches to have training and expertise.

This review also discovered initiative characteristics that were context dependent because they benefited specific teaching activities or social interactions. For example, observation forms were often used, but they differed in design and purpose across institutions. While not necessarily transferable, these ideas may be beneficial to faculty developers who face challenges in similar contexts. Finally, the website review identified areas for future research, including the need to determine peer coaching initiative processes and characteristics that optimize teaching effectiveness.

The second study established a focus group of seven faculty developers to build consensus on a list of best practices of peer coaching for medical educators. We used the results of the website review to define a best practice as a standard component of a peer coaching initiative that optimized teaching effectiveness. The study was conducted via video-teleconference using the consensus building methodology nominal group technique. Through expert consensus, participant experts derived 17 best practices which serve as a practical resource for initiative design and implementation.

Many of the best practices corresponded with the characteristics most commonly identified in the website review. They also aligned with the literature on peer coaching (6; 23; 37). For example, participation should be voluntary, and peer coaching should be a formative process with confidential feedback. Additionally, a pre-observation meeting to negotiate goals and a post-observation debrief was viewed as important. The alignment of results was not surprising as our participant experts were purposely sampled from initiatives identified in our website review, and they all had extensive knowledge of the literature on peer coaching.

Combining insights from both the macroscopic perspective (website review) and microscopic perspective (focus group) produced a more complete understanding of peer coaching initiatives. For example, in the website review an expert-novice instructional model was commonly referenced, but during the discussion section of our focus group, several of our experts eluded to the benefit of reciprocal peer coaching model or indicated use of both models. Additionally, while observation forms were commonly mentioned in the website review, our experts did not consider their use a best practice. They discussed using them to guide self-assessment and goal setting as opposed to basing feedback

exclusively on the forms. Finally, the focus group provided insight as to 'why' peer coaching should be a formative, confidential, voluntary process. These, and several other characteristics create trust within the peer coaching relationship and between the peer coaching dyad and the program/institution.

THEORETICAL APPLICATION:

Ericsson's Theory of Deliberate Practice, Kolb's Experiential Learning Cycle, and Billet's Workplace Learning Theory helped create a theoretical framework of peer coaching that influenced our research questions and study design. Within the first study, this theoretical framework guided data extraction tool development and data analysis. In the second study, Ericsson and Kolb's theories informed our focus group questions, while Billet's theory shaped the definition of a best practice such that best practices correspond with workplace affordances. Thus, the best practices are the processes and characteristics of a peer coaching program that promote learning and optimize teaching effectiveness. Through application of this theoretical framework, we achieved a more complete understanding of how learning takes place through peer coaching, and the peer coaching initiative.

MILITARY RELEVANCE:

In military medical education, providing ongoing faculty development is challenging. Military treatment facilities often have limited time and resources committed to faculty development as patient care and undergraduate medical education take priority. Teaching faculty commonly struggle to balance patient care requirements with teaching responsibilities. Military teaching faculty are often junior with limited

teaching experience or training. Additionally, frequent deployments lead to atrophy of clinical skills which may degrade teaching confidence (46).

In recent years, the Uniformed Services University of the Health Sciences (USU) has promoted two forms of faculty development to address the concerns listed above. There is a faculty development certificate program that provides work-shops and seminars to teaching faculty across the military healthcare system (MHS). Additionally, there is a health professions education program providing a foundational certificate, master's degree, and a PhD in health professions education. Both programs provide value but rely on resources and expertise provided by the university which constrain availability.

I view peer coaching as a way to make faculty development widely available to undergraduate and graduate level medical educators in both the classroom and clinical setting. If designed properly, peer coaching may also require fewer resources to implement. I plan to share the results of my research with the faculty development leaders at USU and the military healthcare system to promote the implementation of peer coaching initiatives for medical educators across military medicine.

LIMITATIONS:

This thesis should be considered in light of its limitations. The results of first study were based on interpretation of information displayed on websites, and thus may not accurately reflect current initiative practices. Additionally, it is possible not all peer coaching initiatives have a web presence, and thus, I may have inadvertently excluded initiatives advertised locally through word of mouth, e-mail, posters, etc. Third, the common characteristics identified may not apply to institutions outside of North America.

The second study was limited in that it included only one focus group of faculty developers and did not account for the perspectives of other stakeholders (peer coaches, medical educators, learners, etc.). Additionally, due to technical errors a second round of voting was performed several months later, although every attempt was made to recreate the context of the first focus group meeting. Finally, we acknowledge that this thesis evaluated peer coaching through one conceptual framework. Other theoretical perspectives may provide diverging points of view and uncover aspects of program design and implementation that we have not touched upon.

CONCLUSION:

This thesis creates a conceptual model for faculty developers to utilize when designing and implementing peer coaching initiatives for medical educators. It is based on a knowledge synthesis across 45 peer coaching initiatives and 17 best practices of peer coaching that optimize teaching effectiveness. This conceptual model was informed by a theoretical framework that clarified the nature of the research gap, guided research questions and methodology, and assisted data analysis. The theoretical framework explains how and why learning occurs through peer coaching initiatives.

Peer coaching has the potential to provide effective faculty development in the workplace that is far reaching and utilizes fewer resources. Nevertheless, designing programs to meet this goal while continuing to maintain high quality learning outcomes requires an in depth understanding of the complex social and contextual factors associated with this form of faculty development. Future research that involves

collaboration with peer coaching initiatives and participants across multiple institutions is needed to meet this aim.

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