

Expertise, Time, Money, Mentoring, and Reward: Systemic Barriers That Limit Education Researcher Productivity— Proceedings From the AAMC GEA Workshop

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Abstract

Background To further evolve in an evidence-based fashion, medical education needs to develop and evaluate new practices for teaching, learning, and assessment. However, educators face barriers in designing, conducting, and publishing education research.

Objective To explore the barriers medical educators face in formulating, conducting, and publishing high-quality medical education research, and to identify strategies for overcoming them.

Methods A consensus workshop was held November 5, 2013, at the Association of American Medical Colleges annual meeting. A working group of education research experts and educators completed a preconference literature review focusing on barriers to education research. During the workshop, consensus-based and small group techniques were used to refine the broad themes into content categories. Attendees then ranked the most important barriers and strategies

for overcoming them with the highest potential impact.

Results Barriers participants faced in conducting quality education research included lack of (1) expertise, (2) time, (3) funding, (4) mentorship, and (5) reward. The strategy considered most effective in overcoming these barriers involved building communities of education researchers for collaboration and networking, and advocating for education researchers' interests. Other suggestions included trying to secure increased funding opportunities, developing mentoring programs, and encouraging mechanisms to ensure protected time.

Conclusions Barriers to education research productivity clearly exist. Many appear to result from feelings of isolation that may be overcome with systemic efforts to develop and enable communities of practice across institutions. Finally, the theme of "reward" is novel and complex and may have implications for education research productivity.

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Medical education scholarship has steadily increased over the past decades.¹⁻³ Although this is encouraging, the literature also mentions a persistent need for further support of medical educators' efforts to develop and evaluate best practices for teaching, learning, and assessment.^{1,2,4-9} Medical education research is an applied field in

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which educators, clinicians, researchers, and administrators bring together diverse and complementary expertise, and there is the potential to conduct rigorous studies and move education forward in a scientific and evidence-based way. However, that diversity among stakeholders makes it difficult to determine how to best support medical education research efforts to ensure that those who wish to contribute can meaningfully do so. To address this issue, it is important to understand the barriers educators face in formulating, implementing, and publishing studies that seek to address important questions, educational problems, and unexamined assumptions.

The literature highlights a variety of barriers that medical education scholars face in their research efforts, including lack of training programs, lack of protected time or funding, competing administrative and leadership roles, small numbers of learners, and difficulty in defining relevant, measurable outcomes.^{2,10–14} Zibrowski and colleagues¹⁵ explored lack of time as a barrier and found that although faculty felt most limited by a lack of protected time, fragmentation (finding only sporadic opportunities for work), prioritization (juggling competing roles), and motivation (due, in part, to perceptions that education scholarship is undervalued) contributed to these time constraints.¹⁵ Another piece of work from the same group of scholars recommended that efforts center on supporting education research, enhancing interactions among colleagues, and expanding faculty development activities.¹⁶ Both studies noted that research training alone may not change perceptions about the barriers posed by lack of time or support or increase research productivity. It is unclear whether these barriers represent a common experience across researchers and institutions, which barriers educators perceive to be the biggest obstacles to achieving their ideal level of research productivity, and what strategies they believe to be most effective in overcoming them.

To further explore this important topic, we engaged a group of medical education research experts and educators in a consensus-building workshop at the 2013 Association of American Medical Colleges (AAMC) annual meeting. The purpose of the workshop was to answer the following questions: “What barriers do educators face in designing and publishing education research that is useful to consumers of that research, and what strategies could overcome those barriers?” In this article we describe the process and results from the consensus-building workshop.

Methods

Literature Search

Before the workshop, a small group of medical education scholars and researchers developed a preliminary list of potential barriers medical educators face in formulating,

conducting, and publishing education research as well as proposed strategies for overcoming them. The list was based on a literature search for articles published from the beginning of 2000 through the end of 2013 using PubMed, ERIC, and Google Scholar using the following search terms: medical education research, educational research, barriers to educational research, medical education research barriers, and barriers to research in education. Additionally, the group included relevant articles from personal files and the reference sections of identified articles to further expand the search. The search yielded 17 articles, and after careful review, 7 articles were included that described barriers to medical education research.^{1–3,11–14}

The group iteratively reviewed and revised the list of barriers and strategies to overcome them for completeness. This presession content list was used to sensitize the focus group facilitators to possible responses so that they would be prepared to lead a discussion that was representative of participant opinions without exclusively focusing on issues already well recognized. This method was deemed important given the time constraints of a 90-minute workshop.

Consensus-Building Workshop

The consensus-building workshop was held as a Group on Educational Affairs Small Group Discussion titled “Defining Quality in Medical Education Research: A Consensus-Building Discussion.” In addition to being advertised as part of the conference, the workshop was announced in several Accreditation Council for Graduate Medical Education (ACGME) e-mails to program directors and via Twitter.

The workshop began with a 15-minute presentation to define the questions and intended goals of the session, brief the audience on the consensus-building process, and provide focused background information to facilitate participants’ ability to engage in the process. Participants were then divided into focus groups for a 25-minute facilitated discussion. The 3 facilitators in each group began by prompting participants to brainstorm about the obstacles they faced in formulating, implementing, and publishing education research studies that met their desired level of productivity and writing individual lists of the barriers. Next, the lead facilitator led a group discussion to generate a consensus list of barriers, which was simultaneously transcribed on poster paper by a second facilitator. Quiet participants were drawn out, dissenting opinions were sought and explored, and the lead facilitator continued to probe until saturation was reached. The draft list of barriers that had been created a priori was then circulated, and participants were prompted to review it and add any further items to the collective master list that they

thought were relevant but had not previously emerged. Both open-ended questioning and structured review of the proposed barriers were used to generate new ideas, organize content around emerging themes, and reach consensus about the top barriers that participants face in conducting medical education research. In the final step, the groups were asked to generate ideas for solutions they would find helpful in overcoming the identified barriers.

Consensus group sessions were audio recorded or hand transcribed. In addition, a dedicated observer with content expertise traveled among groups, observed a portion of the discussions, and made notes about overarching themes. At the conclusion of the session, attendees convened in a large group, and the observer presented a brief summary of the barriers identified and the proposed solutions. Participants were invited to make clarifications or additions to his summary response.

Analysis

Transcripts were iteratively reviewed to ensure that the final content was complete and reflected expert and participant views. Lead facilitators from each group reviewed the transcripts and transcribed notes to generate master lists of barriers and proposed solutions, which were circulated to all facilitators and observers for revisions.

Results

The consensus-building sessions had 32 participants. TABLE 1 describes the participants’ demographic information.

Identified Barriers

Barriers identified by participants were aggregated into 5 themes, listed in descending order of importance: lack of (1) expertise, (2) time, (3) funding, (4) mentorship, and (5) reward. TABLE 2 lists each theme and the related subthemes.

Expertise Participants endorsed lack of expertise, which includes both lack of education research training and difficulty accessing expertise, as the top barrier. Participants noted that a lack of expertise affected them in a variety of ways, from idea generation to study execution to publication. Specific comments included the following:

- “I see what’s out there, but for whatever reason I can’t come up with the idea I think will be publishable.”
- “Doing a validation study is a relatively challenging undertaking, unless you have experience or you have support for that.”
- “I feel that I don’t know enough about study designs.”

TABLE 1	PARTICIPANT DEMOGRAPHIC INFORMATION	
		Participants, No. (%)
Sex		
Women		20 (63)
Men		12 (37)
Degree ^a		
MD/DO		15 (47)
EdD/PhD		10 (31)
MEd/MS/EdS		6 (19)
Other		5 (16)
Academic Rank ^b		
Professor		8 (25)
Associate professor		9 (28)
Assistant professor		6 (19)
Instructor		2 (6)
None reported		3 (9)
Region		
West		9 (28)
Midwest		6 (19)
South		7 (22)
Northeast		10 (31)

n = 32.
^a Ten participants reported 2 advanced (beyond bachelor’s) degrees, 6 participants did not report an advanced degree, and 1 participant was a medical student.
^b Academic rank was not reported for 5 participants; 1 participant reported 2 academic ranks.

- “I don’t know enough about the kinds of journals that I want to publish in.”

Lack of expertise overlapped with other barriers, such as time constraints, that limited participants’ ability to consult experts, the availability of these experts, and lack of funding. One participant noted, “[For a specific education project] with patient care outcomes for educational interventions, you need health services researchers. It’s a funding issue, but often the limitation is access to expertise, to the right people.”

Time Regarding lack of time as a barrier, participants described a lack of “protected” time to read, write, and conduct research as well as the challenges of balancing the demands of competing roles in administration and leadership. Specific comments included the following:

- “I think another [element of the time barrier] is time to actually read the education literature, to know what’s been done . . . in order to frame your study.”

TABLE 2 BARRIERS PARTICIPANTS FACE: THEMES AND RELATED SUBTHEMES

Theme	Subthemes
Expertise: Lack of training in education research methods	Difficulty defining question Difficulty generating ideas Difficulty developing conceptual framework Difficulty identifying study designs Difficulty calculating sample size/power Difficulty identifying feasible/relevant outcomes Barriers with institutional review board process Not understanding review process
Expertise: Difficulty accessing expertise (within medicine and outside of medicine, within and outside the local institution/university)	Statistical expertise Study design expertise Writing expertise
Expertise: Difficulty applying rigorous study designs to education setting	Lack of available measurement instruments Limited numbers of learners Unique ethical and logistic issues
Expertise: Difficulty assembling a skilled research team	
Mentorship: Lack of mentorship	Hard to find mentors Lack of knowledge about how to initiate, develop, and maintain mentoring relationships Those who are available do not always provide what you need Lack of incentive for mentors
Time: Lack of protected time for researcher	Lack of time to read literature Lack of time to write Lack of administrative support
Time: Competing administrative or leadership roles	Too many hats Existing academic “research model” may not be easily applied to education research Lack of leadership support
Money: Lack of funding	Lack of funding opportunities Available grants underfund researcher (eg, do not provide enough support, decreased indirect support)
Reward: Institutional expectations for promotion do not value many essential precursors to education research studies	
Reward: Feelings of professional isolation/lack of community of education researchers	
Reward: Fear of rejection	Perfectionism
Reward: Lack of motivation	Lack of motivation to initiate projects Lack of discipline to stay on track with projects
Other: Misperceptions	Perceptions that there are few journals to submit to Perceptions that field undervalues qualitative research

- “[Another barrier] is time to write in order to publish, because I have a lot of papers I think I could publish but I need time to write them up.”
- “Going along with time, I think it’s wearing too many hats, having too many responsibilities . . . so your heart might be in the right place but there are just not enough hours in the day.”

The time barrier also overlapped with funding, which generated the following comment from a participant: “That’s where I associate time with, you know, if you had the funding you could have some more time.”

Lack of Funding The barrier of lack of funding was centered on attendees’ perceptions that there are limited funding opportunities for education research and that the

few available grants do not adequately cover funding needs, particularly for larger multicenter studies. Specific comments included the following:

- “External grants that support medical education research are few and far between.”
- “[Another barrier is] decreased [funding of indirect costs] on most education grants.”
- “Another piece of it is funding opportunities that don’t provide a large enough budget to do as rigorous a research project as you’d like.”

Participants also indicated that funding had the potential for additional benefits other than time and resources, such as structure and required timelines. As 1 participant noted: “Grants enforce a degree of discipline.”

Mentorship Regarding lack of mentorship, participants reported difficulty with accessing mentors and developing mentoring relationships that met their needs. Subthemes included lack of knowledge about how to identify mentors, how to initiate and engage in a mentoring relationship, difficulty maintaining a relationship with an overcommitted mentor, and misalignment of mentee and mentor expectations.

The mentorship theme overlapped with expertise, as some participants mentioned a desire for mentors to either lend expertise directly or to connect them with expertise. Although we did not fully explore how much overlap existed between the lack of mentorship and lack of expertise themes, participants did identify the 2 barriers as separate entities in both the individual and the group lists of barriers. Participants also valued peer-to-peer mentoring but voiced that efforts to collaborate with peers could be thwarted by competing interests and time constraints. One participant commented: “Sometimes it’s difficult to collaborate because maybe you’re interested in something more narrow [but] your colleagues are interested in something more broad . . . Everyone has such constraints on their time that they really want to focus on what they want to focus on, and it’s hard to find the middle ground sometimes.”

Rewards The fifth barrier theme is related to participants’ perceptions that engaging in education research did not result in intrinsic or extrinsic rewards. They described a lack of intrinsic reward, complicated by feelings of professional isolation and a lack of extrinsic recognition of the value of education research. Although many participants looked to their institution for support, some found that “institutional norms can be a barrier.” For example, a participant described how institutional expectations for promotion could encourage faculty to spend time working on “quick and easy” studies to generate publications rather than approach the questions that were most interesting to them and important to their career over the long term. Another participant endorsed that institutional expectations may also affect intrinsic motivation through a lack of local recognition and reward for personally meaningful areas of study and commented, “Is it worth my energy if it’s not going to be recognized in my own [institution]?” Finally, participants voiced concerns that unsuccessful efforts can be a barrier in that they can overshadow reward. One noted: “I have one more [barrier]—painful rejection experiences which I think can also be very disappointing.”

Strategies for Overcoming Barriers

When participants identified strategies to help them overcome barriers they face, a dominant suggestion involved building communities for education researchers. Participants discussed the importance of collaborating with

colleagues to share resources, stay motivated and accountable, and share skills. The structure and aims of the visions for these communities were diverse. Although local communities have value, larger institutional communities, such as academies for medical educators, were thought to be important to facilitate access to expertise and mentoring, and to serve as education research advocates. Finally, participants emphasized the importance of collaborating with people outside their institution, specialty, and discipline, and proposed the creation of virtual communities. Virtual communities could serve to facilitate mentoring relationships and mitigate time, funding, and expertise barriers by allowing people to share resources. Additional strategies elicited included adopting personal, departmental, and institutional practices to provide educators with added time for research. Themes and representative quotes relating to potential solutions are presented in TABLE 3.

In closing comments, the session content expert and observer reflected on the complex interplay between the barriers and the need for systems-level solutions. He described the catch-22 nature of the barriers of time, money, and expertise: “If we don’t have time, we can’t get money, and if we don’t have money, then it’s difficult to have the time to acquire the expertise in terms of support from others, or in terms of our own training. Money creates time by offering salary support or offering research assistance . . . these are systemic issues.”

Although these issues may seem overwhelming to individual researchers, the session content expert emphasized that small interventions may have larger downstream benefits, and he stressed the importance of trying to identify a community of practice though “networking at conferences like this, and [perhaps more importantly] . . . for crossing one’s own campus to determine how to take advantage of the complementary expertise and resources that you may have locally.”

Finally, he reflected on the importance of leadership and advocacy to help “deans and department heads [recognize] that the reward structure has to be put in place, has to be aligned with the expectations that are being placed on all of us. Because there’s nothing that makes anybody more crazy than pursuing goals and doing one’s best to try and fulfill expectations and realizing that the reward structure that they are going to be evaluated by is completely inconsistent with those efforts.”

Discussion

When prompted to describe the barriers that prevent them from achieving their education research goals, the participants echoed themes described in the literature, including lack of expertise, time, funding, and mentorship.^{1–3,13–16}

TABLE 3 SUGGESTED STRATEGIES FOR OVERCOMING BARRIERS

Theme	Subthemes	Representative Quotes
Need for community of education researchers to increase reward and collaboration	Collaborate locally and nationally (share expertise/resources/subjects) Collaborate to apply for grants Collaborate with other fields/disciplines Develop networking opportunities Mechanism for groups to lobby for education research interests	■ “Going to meetings is definitely helpful, and then being able to follow through with it. And that’s the time piece. So having time to be able to come to these, and collaborate, and then the time to follow through.” ■ “Collaboration”; “There’s strength in numbers”; “When you’re by yourself it’s easy to say ‘Yeah, put that meeting in there’”; “And there’s some amount of . . . accountability.” ■ “Reach beyond medical educators.” ■ “Part of it is that we have to educate our department chairs . . . [what] counts as scholarship.” ■ “If you have an Academy of Medical Educators that does any lobbying to get together to sort of work with department chairs, like an education lobby.” ■ “The more fundamental thing is that you just find some like-minded individuals and start to do work and collaboration.” ■ “Collaborate with those that have passion.”
Increased funding opportunities	Seed grants Collaborative grants	■ Even small grants can be a catalyst: “The act of applying makes you write down what you want to do.”
Mentoring programs	In addition to formal mentoring programs, collaboration can meet a mentoring need	■ “Having opportunities to collaborate . . . helps when you don’t have a mentor.”
Built-in mechanisms for protected time	Scheduled time to write alone Collaborative writing retreats	■ “We’ve actually started writing retreats, because we have this backlog of papers, and so I’ll take out my calendar and just block it out for a day or two, and we’ve made huge progress doing that . . . with colleagues.”

However, the barrier that we found most novel and intriguing was the complex theme of reward.

Participants were familiar with strategies to address previously identified barriers, yet they still feel limited by them. In their effort to address lack of expertise and suboptimal mentorship, participants reported pursuing training opportunities and deliberately seeking mentors. Participants expressed frustration with the limited impact these solutions have in overcoming barriers, and they endorsed the importance of collaborating within and among institutions, fields, and disciplines to share expertise and resources. Although the success of these collaborations and interactions depends on the individual relationships to a certain extent, systemic initiatives that facilitate practical and consistent avenues for collaboration are needed. Participants reported that they do find opportunities for collaboration through professional development offerings that exist at the local and national level, ranging from sessions at conferences to longitudinal faculty development programs, such as the AAMC’s Medical Education Research Certificate program and advanced degree programs.¹⁷ As an additional resource, participants also called for the development of new platforms for collaboration, such as virtual education research communities.

Collaboration was also seen as a strategy to address the barriers posed by limited time and funding. Strategies for improving time management skills and increasing funding

for education research have been suggested, yet these barriers are not unique to educators and are not likely to disappear.^{18,19} Perhaps the most intriguing aspect of the discussion emerged when participants were polled on whether or not the barriers they faced limited the research productivity they aimed to achieve. Although most endorsed the concept that they are limited by barriers, a few respondents acknowledged that though barriers exist, they did not feel limited by them. Perhaps key answers lie in future exploration of how certain people face the same limitations but achieve success nonetheless.

Although others have explored the effect of extrinsic reward and have advocated for professional pathways that recognize the unique contributions of education researchers, we were struck by participants’ expressions about how intrinsic reward affected their productivity. This prompted an important question: How do medical education researchers perceive value in what they do? Participants expressed a feeling of professional isolation, exacerbated by a sense that their role is not clearly defined, valued, or supported. Perhaps more than any other theme, this systemic, culture-based barrier relates to personal and professional identity and may affect motivation.

Intrinsic motivation occurs when people pursue activities because they find them interesting and derive satisfaction from them. In contrast, extrinsic motivation comes from tangible rewards.²⁰ Although some extrinsic

motivators may increase intrinsic motivation, others may undermine it.^{21,22} As educators and institutions explore systemic strategies to support education researchers, consideration of how reward facilitates and limits educational scholarship and how interventions affect extrinsic and intrinsic motivation should inform the development and implementation of these strategies.

Conclusion

Educators continue to feel limited by a lack of expertise, time, funding, and mentorship in achieving their research goals. Although individual strategies to limit the impact of these barriers are needed, systems-level interventions to create and enable communities of practice among diverse medical educators may be more effective. The theme of reward is complex and merits further investigation. Individual researchers' perceptions of the barriers they face may be influenced by feelings of isolation that might be overcome by efforts to promote collaboration. Finally, some educational researchers reported that they did not perceive significant barriers, suggesting a need for further study of the factors that affect extrinsic and intrinsic motivation, which may help some people succeed despite real or perceived barriers to education research productivity.

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