

Creating an “Education Shark Tank” to Encourage and Support Educational Scholarship and Innovation

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Abstract

Problem

Creating and supporting opportunities for innovation that showcase and reward creativity in medical and biomedical education is critically important for academic institutions, learners, and faculty.

Approach

In 2014, the Institute for Excellence in Education at Johns Hopkins University School of Medicine created a small grant program called Education Shark Tank, in which two to five finalist teams present their proposals on innovative initiatives to improve education to four or five senior educator “sharks” at an educational conference, with

an audience. The sharks then “grill” the presenters, considering which if any to fund, focusing on the rationale, feasibility, appropriateness of the outcome measures, evaluation and assessment plan, and proposed method of dissemination. They also make suggestions that challenge the presenters to assess and improve their designs.

Outcomes

In the program’s first year (2014), funds were divided equally between two projects, both of which were successfully completed and one of which led to a journal publication; this led to increased funding for the program in 2015.

Participants have called Education Shark Tank a “challenging and rewarding experience.”

Next Steps

Education Shark Tank can facilitate educational innovation and scholarship via engaging and challenging interactions between grant applicants and reviewers in a public venue. The authors plan to conduct a five-year survey (after 2018) of all Education Shark Tank finalists to determine the success and challenges the funded projects have had, what scholarly dissemination has occurred, whether nonfunded projects were able to move forward, and the value of the feedback and mentoring received.

Problem

In this ever-changing health care climate, learners and teachers need, deserve, and expect exciting, relevant, up-to-date curricular content and methods of instruction. Innovations in medical and biomedical education address this need by improving how we teach and informing what we teach. In addition, innovations can help advance the careers of junior faculty, as innovation necessitates skill enhancement and often translates into scholarship, which is an important criterion for academic promotion at many institutions.¹

Creating opportunities for innovation that showcase and reward creativity in medical and biomedical education is critically important for academic

institutions, learners, and faculty. To reach their full potential, junior faculty not only need a culture that values creativity but also need start-up funds, skills development, and experienced mentoring.²

Approach

Background

The Johns Hopkins University School of Medicine established the Institute for Excellence in Education³ (IEE) in 2009. The four pillars of the IEE are (1) improving teaching; (2) inspiring and supporting research, scholarship, and innovation in education; (3) valuing and recognizing teaching and education; and (4) fostering a community of educators. To support the scholarship and innovation portion of the second pillar, in 2014 we created a small grant program, modeled after the television show *Shark Tank*, that provides contestants with real-time feedback on their proposals from a panel of senior faculty and an open forum for collaboration, connections, collegiality, and shared interactive learning. The goals of the program are to support innovative initiatives to improve education, and to promote scholarship in medical and biomedical education,

while supporting the careers of medical and biomedical educators by providing applicants with the opportunity to prepare and present their ideas, receive feedback and mentoring, and complete a scholarly project.

On ABC’s reality television show *Shark Tank*,⁴ aspiring entrepreneur–contestants make business presentations to a panel of investors (referred to as sharks), who critique their pitch and ultimately decide on whether to invest. Using this as a model, in the fall of 2014, we developed the Education Shark Tank program, where contestants present their proposals on innovative initiatives to improve education to four or five “education sharks” in front of our annual educational conference audience. Contestants can be any School of Medicine learner or faculty member. All of the sharks are experienced educational scholars from diverse professional backgrounds who have been involved in educational programming at our institution for many years and who, collectively, have over 300 peer-reviewed publications. The conference is open to everyone at the Schools of Medicine, Nursing, and Public Health and is typically attended by approximately 100 faculty members and learners.

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We felt that having the contestants share their cutting-edge proposals in front of a broad audience would provide an engaging forum for discussion. Further, with this format, contestants receive real-time feedback and guidance on their plans from the sharks; the IEE also provides winners with ongoing mentoring to supplement that provided by the team mentor and resources to facilitate the refinement, implementation, evaluation, and dissemination of their proposals.

Education Shark Tank process

The process for Education Shark Tank is as follows: Approximately three to four months in advance of the annual educational conference, we broadly disseminate a request for proposals via e-mail, our Web site, and our social media, seeking a short synopsis that includes the problem or issue and its importance, the proposal or innovation, the intended assessment and evaluation plan, and the budget. We highlight that we are looking for projects that address an important issue for health care or scientific inquiry and place an emphasis on innovation and feasibility. All proposals need to be submitted eight weeks before the conference. The sharks review all submissions and, one month before the conference, notify two to five teams with the most compelling projects for enhancing education delivery that their team has been invited to present at the conference. The sharks send most applicants (including those not invited to present) brief comments on their proposals via e-mail.

At the conference, the finalist teams deliver a 10-minute oral presentation, with generally one member of each team presenting. The sharks then “grill” the presenters for 10 to 15 minutes, focusing on the rationale, feasibility, appropriateness of the outcome measures, evaluation and assessment plan, and proposed method of dissemination. The sharks also share their valuable experience by making suggestions that challenge the presenters to assess and improve their designs. This interaction between the applicants and the sharks is one of the key elements that we believe makes the Education Shark Tank format engaging, powerful, and successful. In this spirit, we encourage presenters to prepare and deliver animated, compelling presentations that stimulate

the imagination. The sharks, in return, ask challenging, thought-provoking questions, exposing both weaknesses and opportunities for improvement, thus encouraging presenters to expand on and polish their ideas.

After all teams have presented, the sharks retire, confer, and decide how to distribute the funding. The sharks do not use a standard scorecard. Rather, they hear all proposals; question the presenters; discuss (in private) the merits of each; and consider which projects address an important issue, are feasible with the funding requested, and have the best opportunity to succeed. One project could get all the money, the money might be divided among projects, or the sharks might decide not to invest in any of the projects. The funding comes with specific feedback, often with particular stipulations related to the project which are noted during the shark tank presentation, and ongoing mentoring based on need, as some projects have more experienced team mentors than others. We invite those granted funding to meet with the IEE Managing Board, the IEE Director, or the Office of Assessment and Evaluation, as needed, to help the project succeed. All are required to submit a report upon completing their project.

This process is different from most traditional science or medical grant application processes as reviewers assess in real time which of the proposals are well presented and planned, and which have the strongest potential impact and the best chance of success. Our process adds a twist on traditional grant application processes, which are not often presented in a public forum. In addition, it provides all those attending the conference the opportunity to hear feedback on a proposal, a process which is not shared by traditional grant applications. Furthermore, we believe the program as a whole is innovative, as we were not able to find any comparable programs in our literature search.

Outcomes

The early outcomes from the first three years of Education Shark Tank (2014–2016) include submission- and presentation-related data, information on completed funded projects, and feedback from the participants.

Submission- and presentation-related data

Tables 1 and 2 list data about the submitted, and presented and funded projects, respectively. Overall, we were pleased with the number and quality of proposals and felt we achieved our goal of supporting the careers of medical and biomedical educators (especially junior faculty) in educational projects. However, there was a decrease in the number of applications in 2016 (7 vs. 13 in 2015), and the vast majority of proposals (23/25; 92%) were for curriculum development projects (with nearly half of those being focused on the resident/fellow learner level [10/23; 43%]), leaving only 2/25 (8%) proposals on educational research (Table 1). Principal investigators were primarily trainees or junior faculty at the instructor, assistant professor, or other level (21/25; 84%). We need to follow the program for a few more years to see if the number of medical or graduate student principal investigators increases.

Presenters for the finalist teams and their projects were diverse in terms of academic rank, department, intended learner level, and project type (Table 2).

Information on completed funded projects

Addition funding would be helpful; yet, we have been impressed with the work that our grantees have completed with limited funds.

In the program’s first year (2014), funds were limited to \$2,500, and this amount was divided equally between two projects—both of which were successfully completed. The first project advanced the Alike Initiative,⁵ which teaches patient-centered care to medical students and residents, emphasizing the importance of knowing each patient as an individual. The project examined the process of postdischarge recovery after a critical illness by inviting former intensive care unit patients back to Johns Hopkins Bayview Medical Center to share their experiences with internal medicine residents and medical students. In follow-up conversations to evaluate the program, learners described the program as “transformative,” so much so that the program has become a standard, important part of the Bayview Medical Center’s internal medicine resident and medical student intensive

Table 1

Data on Education Shark Tank Submissions, Institute for Excellence in Education, Johns Hopkins University School of Medicine, 2014–2016

Demographics	Submissions by year		
	2014 (n = 5)	2015 (n = 13)	2016 (n = 7)
Rank of principal investigator, no.			
Student/Learner	1	3	1
Instructor		2	
Assistant professor	1	5	4
Associate professor	2	1	1
Other ^a	1	2	1
Departments represented by principal investigator, no.			
Biological chemistry ^b			1
Geriatric medicine and gerontology	1		
Medicine	1	6	1
Neurology and neurosurgery		1	
Gynecology and obstetrics			1
Otolaryngology (head and neck surgery)			2
Ophthalmology ^c		1	
Spiritual care and chaplaincy	1		
General preventative medicine		1	
Psychiatry and behavioral science	1	1	
Surgery	1	2	2
Nursing		1	
Curriculum development projects, by intended learners, no.			
Medical student	1	1	1
Graduate student			
Resident/Fellow	1	7	2
Faculty		1	
Interprofessional	1	1	1
Multiple learner levels	1	3	1
Patient			1
Educational research projects, no.	1		1

^aAll those in the other category were junior faculty.

^bIncluding the Institute of Genetic Medicine.

^cIncluding the Wilmer Eye Institute.

care unit curricula. The second project addressed a concern regarding the lack of preparedness of some medical school graduates. The team conducted a national survey of surgery program directors and identified gaps and areas where resident performance and patient safety competencies in the Association of American Medical Colleges' 13 Core Entrustable Professional Activities for Entering Residency could be improved.⁶ The project led to a publication in a peer-reviewed journal,⁷ and may result in curricular interventions to improve training for students entering surgical fields.

With additional philanthropic support, the IEE was able to increase funding for Education Shark Tank to \$10,000 in 2015. That year, the sharks awarded all the money to a project titled "Incorporating High-Value Care Into the Ambulatory Medicine Curriculum for Internal Medicine Interns." This project falls in line with other campaigns designed to improve quality and reduce medical costs, such as the American Board of Internal Medicine Foundation's Choosing Wisely initiative and a new graduate medical education initiative at Johns Hopkins University of Medicine.⁸ The project is currently collecting data on the

intervention, which involves seminars, role-playing scenarios, and standardized patient encounters.

In 2016, the sharks again awarded the full amount (\$10,000) to a single project entitled "Developing a Series of Modules to Introduce Medical Students to Whole Genome Sequencing." The team consisted of graduate students, so we asked them to work with the IEE and the Office of Assessment and Evaluation to improve their proposal. Module development is currently under way.

Feedback from participants

We recently surveyed finalists via e-mail to get further feedback on Education Shark Tank. The principal investigator of the winning project from 2015 called the process "an incredible experience that provided me the chance to crystalize my thoughts on my project and why it mattered, which ultimately made the project itself stronger."

Additionally, one of the principal investigators from the winning project in 2016 said Educational Shark Tank was a "challenging and rewarding experience." The investigator added that the sharks asked great questions and showed great enthusiasm for the project.⁹

Perhaps the most important comment came from a finalist who was not awarded funding. The finalist noted that presenting to the sharks in a public forum helped the team realize that they had not presented their project in a clear way that would connect with those who were unfamiliar with the project. The finalist added that the team eventually secured funding for the project from another source thanks to the feedback they received from the sharks.

Next Steps

Education Shark Tank can facilitate educational innovation and scholarship via engaging and challenging interactions between grant applicants and reviewers in a public venue. On the basis of our positive experiences with Education Shark Tank, we have made it a permanent part of the IEE's annual educational conference. In addition, we have incorporated many of its components into a new small grant program, where finalist teams present to the IEE Managing Board

Table 2

Data on Education Shark Tank Presentations and Projects That Received Funding, Institute for Excellence in Education, Johns Hopkins University School of Medicine, 2014–2016

Demographics	Presentations by year		
	2014 (n = 2)	2015 (n = 5)	2016 (n = 3)
Projects that received funding			
Grants awarded, no.	2	1	1
Total amount awarded, \$	\$2,500 ^a	\$10,000	\$10,000
Rank of presenter, no.			
Student/Learner	1 ^b	1	1 ^b
Instructor		2 ^b	1
Assistant professor		2	1 (withdrew)
Associate professor	1 ^b		
Departments represented by presenter, no.			
Biological chemistry ^c			1 ^b
Medicine	1 ^b	3 ^b	1
Surgery	1 ^b	2	1
Curriculum development projects, by intended learners, no.			
Medical student			1 ^b
Resident/fellow		2 ^b	1
Faculty		1	
Multiple learner levels	1 ^b	2	
Patient			1
Educational research projects, no.	1 ^b		

^aAmount was divided equally between the two winning projects.

^bAt least one project from this category was selected for funding.

^cIncluding the Institute of Genetic Medicine.

for the chance to receive up to \$7,500 for their project. One member of each team must hold a School of Medicine appointment. Similar to Education Shark Tank, the goals of this small grant program are to support educational innovation and promote scholarship, while supporting the careers of medical and biomedical faculty, and winners have access to ongoing mentorship from the IEE. Furthermore, we continue to seek additional philanthropy to extend the number of grants given via Education Shark Tank. We realize that not all applicants will receive funding; therefore, to encourage enthusiasm for educational scholarship, we now provide mentoring time and office hours for all applicants at any stage in the process. Projects that are not accepted to present to Education Shark Tank can apply to the new IEE small grant program. In addition, we plan to conduct a five-year survey (after 2018) of all Education Shark Tank finalists to determine the successes and challenges the funded

projects have had, what scholarly dissemination has occurred, whether nonfunded projects were able to move forward, and the value of the feedback and mentoring received.

Institutions interested in implementing their own Education Shark Tank program must embrace and support creativity in educational scholarship. They need to provide a venue that promotes collegiality along with competition (such as grand rounds); offer to help prepare the sharks and those presenting to ensure that they understand the “shark tank” concept; and secure a small amount of funding as “bait.” Additionally, sharks must be carefully selected to ensure that they have diverse professional backgrounds and interests, are willing to entertain all ideas, and are able to mentor the applicants through the process. Finally, the process must be both engaging and interactive.

References to sharks in academic medicine have not been positive, nor pleasant. In

his well-known “Dinner Address. How to Swim With Sharks: The Advanced Course,” Richard J. Johns¹⁰ compared the environment of academic medicine to shark-infested waters, where swimmers have to take special precautions and be prepared to defend themselves if attacked. In this high-pressure, stressful environment, “swimmers” often waste valuable time, effort, and energy defending themselves and thus limit opportunities for productivity and innovation. He concluded, “We must strive to change the environment so that this behavior is unnecessary.” Acknowledging this, we created our Education Shark Tank in a collegial environment intended to be interactive and engaging, thereby encouraging the sharing and healthy development of novel ideas. The sharks provide feedback in a positive, constructive, and appreciative manner, so the swimmers do not feel “attacked” but instead feel encouraged and supported. We strongly believe Education Shark Tank is a useful way for institutions to promote innovation, educational scholarship, and, possibly, culture change.

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References

- 1 Yeh HC, Bertram A, Brancati FL, Cofrancesco J Jr. Perceptions of division directors in general internal medicine about the importance of and support for scholarly work done by clinician–educators. *Acad Med*. 2015;90:203–208.
- 2 Reed DA, Cook DA, Beckman TJ, Levine RB, Kern DE, Wright SM. Association between funding and quality of published medical education research. *JAMA*. 2007;298:1002–1009.
- 3 Johns Hopkins Medicine. Institute for Excellence in Education. http://www.hopkinsmedicine.org/institute_excellence_education. Accessed February 16, 2017.
- 4 ABC. About Shark Tank. <http://abc.go.com/shows/shark-tank/about-the-show>. Accessed February 16, 2017.
- 5 Ratanawongsa N, Rand CS, Magill CF, et al. Teaching residents to know their patients as individuals. The Alike Initiative at Johns Hopkins Bayview Medical Center. *Pharos Alpha Omega Alpha Honor Med Soc*. 2009;72:4–11.
- 6 Association of American Medical Colleges. Core Entrustable Professional Activities for Entering Residency. Washington, DC: Association of American Medical Colleges; 2014.
- 7 Lindeman BM, Sacks BC, Lipsett PA. Graduating students' and surgery program directors' views of the Association of American Medical Colleges Core Entrustable Professional Activities for Entering Residency: Where are the gaps? *J Surg Educ*. 2015;72:e184–e192.
- 8 McMillan JA, Ziegelstein RC. Implementing a graduate medical education campaign to reduce or eliminate potentially wasteful tests or procedures. *JAMA Intern Med*. 2014;174:1693.
- 9 Childs B, Wiener C, Valle D. A science of the individual: Implications for a medical school curriculum. *Annu Rev Genomics Hum Genet*. 2005;6:313–330.
- 10 Johns RJ. Dinner address. How to swim with sharks: The advanced course. *Trans Assoc Am Physicians*. 1975;88:44–54.