

Faculty Development in Clinical Teaching Series

Strategies for Success: Getting your Educational Scholarship Published

This 2 hour workshop will provide educators with an overview on how to develop and implement education research studies. The presenters will share “insider tips” from an education journal editor’s perspective on manuscript writing and journal selection. In the second hour, participants will break up into small groups facilitated by a researcher to share a study idea, peer-review an instrument, or receive specific feedback about a study they are currently working on.

At the conclusion of this workshop, participants will be able to:

1. Outline a strategy for developing and implementing an education research study successfully, with limited resources.
2. Describe the steps of writing a manuscript for publication.
3. Identify the critical variables that increase likelihood of publication by an education research journal.

Time	Topic(s)	Method(s)
40 min.	Introduction to Education Research	Large Group:
	<ul style="list-style-type: none"> • Overview of study designs • Examples of published studies • Suggestions for success 	Interactive Presentation
15 min.	Large group Q&A	
5 min.	Break	
50 min.	Applying the Impactful Acceptance Features to Works in Progress	Small Group Working Groups
	<ul style="list-style-type: none"> • Individual members will present individual ideas/rough drafts of papers & obtain feedback • Individual action plans drafted with coaching as needed by expert facilitators 	Discussion with Worksheet & Action Plan template
10 min.	Take Home Points & Action Steps	Large Group
	<ul style="list-style-type: none"> • Summary by participants and editor/facilitators: common themes in Action Plans from small groups 	

Materials

- Education project checklist
- Action plan template
- Writing guide
- Useful resources

Handout Adapted from AAMC/GEA JGME Sponsored Workshop, Nov 5, 2012 (The Personal Trainer Approach to Writing for Education Journals: Ready, Set, Go), developed by JGME Editor Facilitators (Artino A, Lyson M, Simpson D, ten Cate TJ, Opas L, Sullivan G, Chretien K, Philibert I, Yarris L, DaRosa D, Sargent J) and used with permission.

Work-in-Progress Checklist for Education Papers

Step	Done	N/A
Brief literature search		
Identify potential question(s) FINER (Feasible, Interesting, Novel, Ethical, Relevant) & conceptual framework		
Identify mentor		
Identify colleagues		
Identify sites (>1 better). If 1 site, repeat intervention more than once		
Identify statistical help		
Meetings/emails to refine research question		
Determine research approach to best answer the questions: quantitative, qualitative, or mixed methods. <i>Note: these resources mainly address quantitative approaches</i>		
Intervention studies: define intervention operationally (recipe that others can replicate) & identify comparison group (controls with active alternative intervention better)		
Observation or cohort studies: thorough sample recruitment; comparison of responders/participants to non-responders/non-participants, or to total population		
Determine meaningful outcomes; eg, for innovations: <i>feasibility</i> (faculty time, trainee time, training, staff, materials, IT) and <i>acceptability</i> (to trainees, to faculty, to team)		
Determine level of outcomes: Kirkpatrick's (1: reaction/satisfaction; 2: change in skills or knowledge; 3: change in behaviors or practices; 4: change in patients or system)		
Determine instruments to measure outcomes		
Describe validity evidence for instruments used; for 'home grown' outcome instruments describe development, testing, modifications		
Can outcomes be measured objectively (external better than self-assessment)		
Can outcomes be measured distant from intervention (ie not just immediate)		
IRB request for exemption or approval (if humans involved)		
Quantitative study: determine likely effect size (from lit., pilots, minimum change considered of value) & use with type I error (p), & type II error (β) to calculate sample size		
Quantitative study: determine comparisons to be made; adjust p level for #comparisons		
Use MERSQI or BEME scales to rate quality of your project: can you enhance? (for quantitative studies)		
Construct flow chart of study steps and participants, as applicable		
Ongoing: Write everything down at least in outline format Keep references in End Note, Refworks or similar		

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Action Plan

Write down 3 steps you will commit to undertake within the next 5 days, in the area most relevant to your project.

Ready – planning your study

Set – conducting your study

Go – analyzing, writing, and submitting your study for publication

1	<input type="checkbox"/> <u>Re-do literature search</u> ; hand-search bibliography of ‘best’ paper on topic
2	<input type="checkbox"/> <u>Review stated aims</u> of journal of interest and skim an issue; does project/study fit?
3	<input type="checkbox"/> <u>Read author guidelines</u> and choose category that best fits article. Follow author guidelines <i>exactly</i> .
4	<input type="checkbox"/> <u>Adhere to word count</u> and #tables/figures. If not possible, explain why in your cover letter to journal.
5	<input type="checkbox"/> <u>Set deadlines</u> ; don’t disappoint your colleagues. <input type="checkbox"/> If writing is difficult, make outline, jot phrases, organize. Try dictating (voice-recognition software).
6	<input type="checkbox"/> If English <i>is not</i> your first language, have someone who is <u>review and proof</u> your paper. <input type="checkbox"/> If English <i>is</i> your first language, have someone review and proof your paper.
7	<input type="checkbox"/> Title : usually ≤15 words. Include intervention, type of study, trainee type, setting - if possible - to help reader decide if should read further/click on link
8	<input type="checkbox"/> Abstract : may be only part of paper that is read. Usually introduction, methods, results, conclusions but follow author guidelines. Always include sample size.
9	<input type="checkbox"/> Introduction : 1-2 sentences introduce the topic: why important and relevant to journal’s readership. Set your research purpose or hypothesis within a conceptual framework (why should it work?)
10	<input type="checkbox"/> Introduction : 1-2 paragraphs outlining the research or evidence gap that exists. This justifies why your project needs to be done, published, and read. The introduction is not a review of the topic.
11	<input type="checkbox"/> Introduction : end with a sentence (or two if complicated study) that is your study hypothesis (question) or purpose.
12	<input type="checkbox"/> Methods : organize. Relevant sections are: Setting and Participants, Intervention, Outcomes, Analysis, IRB statement (1 sentence only).
13	<input type="checkbox"/> Methods : include all steps so your intervention could be replicated. If long, put in table or box. If still too long, label as appendix (online supplemental material) and keep brief description in paper.
14	<input type="checkbox"/> Methods : describe validity of outcome measures or cite literature. At minimum provide who developed/expertise, any testing/piloting, modifications if ‘home grown.’
15	<input type="checkbox"/> Methods : describe all planned analyses, in terms that a non-statistical expert (the average reader) can understand.
16	<input type="checkbox"/> Results : report in same order that hypotheses stated (if >1). Usually general information (number of participants, demographic info) goes first.
17	<input type="checkbox"/> Results : if many numbers or hard to follow – put into Table or Figure, to enhance clarity (and manage word count)
18	<input type="checkbox"/> Discussion : first 1-3 sentences summarize the most important, unique, or surprising results of your study. <i>Do not repeat justification for the study, which is in the Introduction. Do not put Results here.</i>
19	<input type="checkbox"/> Discussion : next 1-2 paragraphs compare/contrast your findings with those of others, analyzes why similar or different, and what your findings may imply. Label opinions as such; limit these.
20	<input type="checkbox"/> Discussion : next 1 paragraph analyzes how your study’s limitations may have impacted the results, in either direction; full evaluation of limitations enhances chance of publication. <i>Don’t list.</i>
21	<input type="checkbox"/> Discussion : then brief statement of next steps to study this area
22	<input type="checkbox"/> Conclusion : 1-3 sentences that describe strictly your study findings, without speculation

RESOURCES

References

Education Research – Getting Started & General Resources

1. Yarris LM, Deiorio NM. Education Research: A Primer for Educators in Emergency Medicine. *Acad Emerg Med* 2011; 18:S27-S35.
2. Beckman TJ, Cook DA. Developing scholarly projects in education: a primer for medical teachers. *Med Teacher* 2007; 29: 210–218.
3. Yarris LM, Gruppen LD, Hamstra SJ, Ericsson A, Cook DA. Overcoming Barriers to Addressing Education Problems with Research Design: A Panel Discussion. *Acad Emerg Med* 2012; 19:1344-1349
4. Cook DA, West CW. Reconsidering the Focus on “Outcomes Research” in Medical Education: A Cautionary Note. *Acad Med* 2013; 88:2.
5. Bordage G. Conceptual frameworks to illuminate and magnify. *Medical Education* 2009; 43: 312---319.
6. Bordage G, Dawson B. Experimental study design and grant writing in eight steps and 28 questions. *Med Educ.* 2003;37:376-85.
7. Cook DA, Beckman TJ, Bordage G. Quality of reporting of experimental studies in medical education: a systematic review. *Med Educ.* 2007;41:737-45.
8. Sullivan GM. Deconstructing quality in education research. *J Grad Med Educ* 2011; 3: 121-124.
9. Sullivan GS. Using effect size – or why the p level is not enough, and 10 FAQs about effect size. *J Grad Med Educ* 2012;4(3):279-282, 283-284.
10. Sullivan GM. IRB 101. *J Grad Med Educ* 2011; 3: 5-6.

Education Research – Curriculum Development

1. Green ML. Identifying, appraising, and implementing medical education curricula: a guide for medical educators. *Ann Intern Med* 2001; 135: 889 -896.
2. Kern DE, Thomas, PA, Howard DM, Bass EB. *Curriculum Development for Medical Education: A Six-Step Approach*. Johns Hopkins University Press: 1998.
3. Reznich CB, Anderson WA. A suggested outline for writing curriculum development journal articles: the IDCRD format. *Teach Learn Med* 2001; 12(1): 4-8.

Education Research – Qualitative Approaches

1. Kuper A, Reeves, S, Levinson W. An introduction to reading and appraising qualitative research. *BMJ* 2008;337:404-407.
2. Lingard L, Albert M, Levinson W. Grounded theory, mixed methods, and action research. *BMJ* 2008; 337:459-461.
3. Reeves S, Kuper A, Hodges BD. Qualitative research methodologies: ethnography. *BMJ* 2008;337:512-
4. Sullivan GM, Sargeant J. Qualities of Qualitative Research: Part I. *J Grad Med Educ* 2011;3:449-452.
5. Sargeant J. Qualitative Research Part II: Participants, Analysis, and Quality Assurance. *J Grad Med Educ* 2012;1:1-3.
6. Turgeon J. Appraising qualitative research articles in medicine and medical education. *Med Teach.* 2005;227:71-5.

Education Research – Surveys

1. Ricards G, Magee C, Artino Jr, AR. You can't fix by analysis what you've spoiled by design: developing survey instruments and collecting validity evidence. *J Grad Med Educ* 2012; 4(4): 407-410

Education Research – Systematic Reviews

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1. Cook DA, West CP. Conducting systematic reviews in medical education: a stepwise approach. *Medical Education* 2012; 46: 943-952.

Education Research – Instrument Development and Validity studies

1. Sullivan GM. A primer on the validity of assessment instruments. *J Grad Med Educ* 2011; 3: 119-120.
2. Cook DA, Beckman TJ. Current Concepts in Validity and Reliability for Psychometric Instruments: Theory and Application. *Am J of Medicine* 2006; 119: 166e10-199.e16.

Writing and Reviewing

1. Bordage G. Reasons reviewers reject and accept manuscripts: the strengths and weaknesses in medical education reports. *Acad Med.* 2001; 76: 889–896.
2. Roediger HL. Twelve tips for reviewers. *Assoc Psycholog Science.* Apr 2007. www.psychologicalscience.org/observer/getArticle.cfm?id=2157
3. Sullivan GS. Writing education studies for publication. *J Grad Med Educ* 2012;4(2): 133-137.

On Line Courses for Reviewing Skills_(not specific to medical education)

1. Annals of Emergency Medicine course <http://www3.us.elsevierhealth.com/extractor/graphics/em-acep/>
2. Cochrane Collaboration sponsored: <http://eyes.cochrane.org/launch-online-course-journal-peer-review>

Websites

1. *BEME* – Best Evidence in Medical Education. International group, like Cochrane Collaboration, that does high quality systematic reviews of education research. Great resource for information and also instruments with validity evidence for your own studies. <http://www2.warwick.ac.uk/fac/med/beme/>
2. *MedEdPortal* – repository of medical education products, funded by AAMC, for medical, dental, and (adding) other health professions education. These materials are peer-reviewed. <http://services.aamc.org/30/mededportal/servlet/segment/mededportal/information/>
3. www.biosemantics.org/jane: enter your title or abstract and get suggested journals; usually will generate a lot of suggestions, some quite relevant

Education Journals to Consider

One approach is to Google “Medical Education Journals List” which yields links to University of Ottawa www.med.uottawa.ca/aime/eng/journals.html; *Stony Brook University Libraries* <http://guides.library.stonybrook.edu/content.php?pid=222136&sid=1843907> and *Medical Journals Links* <http://www.medical-journals-links.com/medical-education-health-education-journals.php>

A few journals are listed below to get you started.

1. *Academic Medicine* – 12 issues/yr; MD training; targeting faculty/administrators of medical institutions
2. *Advances Health Sciences Education* – 5 issues/yr; all health professions; research linking theory to practice
3. *Annals of Behavioral Science and Medical Education* – targeted to professionals teaching the integration of behavioral science knowledge and skills in medicine
4. *BMC Medical Education* (online) – open access, fee for submitting article; all health professionals
5. *Canadian Medical Education Journal* (online) - open-access; explores new developments and perspectives in the field of medical education from premedical to postgraduate and CME
6. *Journal of Continuing Education in the Health Professions* – 4 issues/yr; innovations in CME
7. *Journal of Graduate Medical Education* – 4 issues/yr; GME research, innovations, reviews, brief reports

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8. *Medical Education* – 12 issues/yr; all health professions; research, reviews, ‘really good stuff’
9. *Medical Science Educator* (online) - focuses on teaching the sciences fundamental to modern medicine and health
10. *Medical Teacher* – 12 issues/yr; all health professions; general articles, short articles for teachers
11. *Teaching and Learning in Medicine* – 4 issues/yr; MD training; basic, applied, & research methods

Usual Calendar for Education Abstract Submissions

1. *Early January*: abstracts due for the Assoc. for Medical Education in Europe (AMEE) annual conference in Aug.
2. *Late February*: abstracts due for Research in Medical Education (RIME) track of AAMC Annual Meeting in Nov. Full papers that are accepted will automatically be published in Academic Medicine
3. *Early March*: deadline for Medical Education Theme Issue of JAMA published in September.
4. *March*: deadline for submissions for the International Conference on Residency Education (ICRE) in fall.
5. *April*: deadline for Group on Educational Affairs (GEA) presentations at AAMC Annual Meeting in Nov.
6. *September*: abstracts due for Canadian Conference on Medical Education sponsored by the Canadian Association for Medical Education (CAME) in April.
7. *November*: poster deadline for Accreditation Council for Graduate Medical Education (ACGME) meeting, Mar.

TABLE 1. Modified Newcastle-Ottawa Scale – for quantitative studies

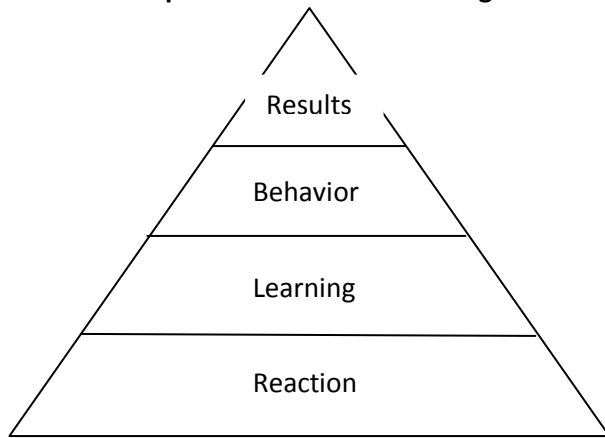
Category		1 Point Each	Max. Score
Representativeness		Intervention group “truly” or “somewhat” representative of average learner in this community	1
Selection		Comparison group drawn from same community as the exposed cohort	1
Comparability	a) Non-randomized 2-cohort studies	Controlled for baseline learning outcome (e.g., baseline pretest scores) Controlled any other baseline characteristic	2
	b) Randomized studies	Randomized Allocation concealed	
Blinding		Blinded outcome assessment*	1
Follow-up		Subjects lost to follow-up* unlikely to introduce bias: small no. lost (75% or greater follow-up) or description provided for those lost	1
Maximum Total Score			6

* Blinding and completeness of follow-up are reported as Yes if this was true for *any* reported outcome.

Modified from supplementary content [http://jama.ama-](http://jama.ama-assn.org/content/suppl/2008/09/05/300.10.1181.DC1/jama0910_JWE80022.pdf)

[assn.org/content/suppl/2008/09/05/300.10.1181.DC1/jama0910_JWE80022.pdf](http://jama.ama-assn.org/content/suppl/2008/09/05/300.10.1181.DC1/jama0910_JWE80022.pdf) & and Wells GA, Shea B, O’Connell D et al. The Newcastle–Ottawa Scale (NOS) for assessing the quality of non-randomised studies in meta-analyses. http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp

FIGURE 1. Kirkpatrick's Levels of Learning



4. Results=Change in patients or the system/organizations practices
3. Behaviors=Change in behaviors or practice
2. Learning=Change in attitudes, knowledge, or skills
1. Reaction=Satisfaction

Adapted from BEME Guide No 8. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education. Steinert et al.

<http://www2.warwick.ac.uk/fac/med/beme/reviews/published/steinert/>

TABLE 2. Medical Education Research Quality Instrument - for quantitative studies

Domain	MERSQI Item	Score	Max Score
Study design	Single group cross-sectional or single group posttest only	1	3
	Single group pretest & posttest	1.5	
	Nonrandomized, 2 groups	2	
	Randomized controlled trial	3	
Sampling	<i>Institutions studied:</i>		3
	1	0.5	
	2	1	
	3	1.5	
	<i>Response rate, %:</i>		
	Not applicable		
	<50 or not reported	0.5	
	50-74	1	
≥75	1.5		
Type of data	Assessment by participants	1	3
	Objective measurement	3	
Validity of evaluation instrument	<i>Internal structure:</i>		3
	Not applicable		
	Not reported	0	
	Reported	1	
	<i>Content:</i>		
	Not applicable		
	Not reported	0	
	Reported	1	
	<i>Relationships to other variables:</i>		
	Not applicable		
	Not reported	0	
	Reported	1	
Data analysis	<i>Appropriateness of analysis:</i>		3
	Inappropriate for study design or type of data	0	
	Appropriate for study design & type of data	1	
	<i>Complexity of analysis:</i>		
	Descriptive analysis only	1	
	Beyond descriptive analysis	2	
Outcomes	Satisfaction, attitudes, perceptions, opinions, general facts	1	3
	Knowledge, skills	1.5	
	Behaviors	2	
	Patient/health care outcome	3	
Total possible score*			18

*Scores range from 5 to 18. Adapted from Reed DA et al. Association between funding and quality of published medical education research. JAMA 2007;298:1002–9.

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TABLE 3. Best Evidence in Medical Education Global Scale

STRENGTH of EVIDENCE	
1	No clear conclusions can be drawn
2	Results ambiguous, may be a trend
3	Conclusions can probably be based on the results
4	Results are clear and very likely to be true
5	Results are unequivocal
OUTCOMES*	
Level 1	PARTICIPATION Learner feedback on the learning experience (e.g., organization, presentation, content, teaching materials, quality of instruction)
Level 2a	ATTITUDES or PERCEPTIONS Changes in attitudes towards intervention or simulation
Level 2a	KNOWLEDGE and SKILLS <i>Knowledge:</i> acquisition of concepts, procedures, or principles <i>Skills:</i> acquisition of thinking and problem solving, psychomotor, or social skills
Level 3	BEHAVIORAL CHANGE Transfer of learning to the workplace or willingness to apply new knowledge and skills
Level 4a	ORGANIZATION PRACTICE Wider changes in organization or delivery of care, attributable to educational program
Level 4b	PATIENT BENEFITS Improvement in health or well-being of patients as a direct result of educational program

* Hierarchy of increasing importance.

Modified from Littlewood S, Ypinazar V, Margolis SA, Scherpbier A, Spencer J, Dornan T. Early practical experience and the social responsiveness of clinical education: systematic review. *BMJ* 2005;331:387–91.

TABLE 4: Grid for Critical Appraisal of Qualitative Research Articles <i>from Coté L, Turgeon J. Medical Teacher. 27 (1): 71-75, 2005</i>	Yes	Unclear	No
Introduction			
1. The issue is described clearly and corresponds to the current state of knowledge.			
2. The research question and objectives are clearly stated and are relevant to qualitative research (i.e., are exploratory in nature).			
Design and methods			
3. The context of the study and the researchers' roles are clearly described (e.g. setting in which the study takes place, consideration of bias).			
4. The design is appropriate for the research question (e.g., phenomenology, grounded theory, ethnography).			
5. The selection of participants is appropriate to the research question and design.			
5.1 Sample participants are able to inform the research question (purposive/ purposeful sampling)			
6. The method for collecting data is clear and relevant (e.g. interview, focus group).			
6.1 Relevant groups are represented.			
6.2 It appears that adding additional participants would not yield new data (saturation)			
7. Data analysis is credible and rigorous.			
7.1 The steps are clearly described:			
a. Transcription			
b. Transcription review			
c. Selection of units of significance or meaning (codes)			
d. Identification of themes			
e. Comparison and contrasting of themes			
f. Process for resolving discrepancies			
7.2 Team members' roles in analysis are described.			
Results			
8. The main results are presented clearly			
9. The quotations make it easier to understand the results			
Discussion			
10. Results are interpreted in credible and innovative ways.			
11. The limitations of the study are presented (e.g., transferability)			
Conclusion			
12. The conclusion presents a synthesis of the study and proposes avenues for further research.			

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