

Standard-setting Example #2 Educational Research

Revised 8/4/09.

Educational Research: Structured Summary

William Search, Ph.D., Microbiology Department

Personal Statement	
Personal Goals	<ul style="list-style-type: none">• To design and conduct meaningful, high quality educational research• To gather and use data to determine changes to the educational process.
Personal Preparation	<ul style="list-style-type: none">• Subscribed to and participated in the International Association of Medical Science Educators' (IAMSE) web seminars• Listened to 6 Webcast Audio Seminar Series on educational research and scholarship produced by IAMSE.
Personal Reflection/ Process for Improvement	<ul style="list-style-type: none">• I discuss my thoughts on research projects in medical education with colleagues and carefully consider their feedback and ideas.• I reflect on results and how they impact my long term goals.
Research Effort	
Theme: Effect of Case Presentations on Medical Students' Performance in a Medical Microbiology and Infectious Diseases Course 1. Can requiring medical students to present a clinical case to their peers and professors improve the students' performance on a case based final exam in an Infectious Diseases Course? 2. Can presenting patient cases improve the students' ability to think critically and rule in and rule out causes of the patient's illness?	
Theme: Effect of OMT curricula on students willingness to use OMT in their future practices 1. Does the curriculum adversely affect the willingness of students to utilize OMT in their practices? 2. How can curricula be modified to encourage the use of OMT?	
Contributions to the Dissemination of the Research Results of Other Investigators	
1. Reviewer, <i>Journal American Osteopathic Association</i> , 2005-present. 2. Board Member, International Association of Medical Science Educators 2008-present.	
Discussion of Breadth	
I have studied multiple issues related to graduate medical education. I have studied the effects of case presentations on critical thinking and have examined the effects of osteopathic medical school curricula on the utilization of OMT by future physicians. These studies should enable other microbiology departments to enhance their student's ability to think critically and enable osteopathic medical schools to construct curricula that enhance the utilization of OMT by their graduates.	

Personal Statement – *William Search, Microbiology Department*

The medical students of today will be the physicians of tomorrow. Our society trusts that the medical school faculties are adequately equipping today's medical students to be their physicians. It is an enormous responsibility that I did not fully realize until I had been a faculty member for about 15 years.

I was the typical basic scientist trying hard to obtain the data I needed to get my grant proposals funded. Educating medical students was considered a "necessary evil" that I did because my contract required I teach medical students. I did not spend much time reflecting on how to teach medical students medical microbiology. I was too busy getting my grant proposals out and publishing my research findings.

About 15 years after coming to KCOM I spoke with a physician in a local store about what he thought would help medical students be better prepared in medical microbiology. I was ready to commiserate with him about how poor the medical students were at learning what I felt they needed to learn. During our conversation I asked him, "Shouldn't medical students know what the Ph.D. faculty knows about medical microbiology?" He responded with a resounding, "NO".

This response surprised me and made me think about what I needed to do to prepare my students to practice medicine. My physician friend discussed how thorough his microbiology professors were at teaching him every detail about the microorganisms that cause human disease. However, when he got in the clinics he quickly realized that his professors had taught him a lot about the microbes that caused disease but very little about the diseases that microbes cause. When he was asked what the most common cause of pneumonia was in a middle aged male it took him five minutes to sort through all the organisms and though he could list all the organisms that caused pneumonia he could not tell his attending what the most common cause of pneumonia was in a middle aged male. He quickly realized that what he needed most was knowledge of the common causes of human infectious diseases. What he wished his microbiology professors had done was to teach him not just the organisms that cause human infectious diseases but also the common microbial causes of the diseases. He did not see microbes in the clinics but rather patients with diseases caused by microbes.

This realization helped me start thinking about what we do as faculty members. I realized that our curricula can have significant positive and negative effects on how our students perform in the clinics and could also seriously affect the quality of care they provide patients in those clinics. From that day on I have for the past 5 years looked for better ways to equip medical students rather than create Ph.D. clones of myself. Our department has changed our course offerings that by the time our students graduate they know the common causes of human infectious disease. Our medical students now consistently perform above the national average on their level 1 board exams and several have chosen Infectious Disease residencies.

Not only did this conversation change our department's courses but it gave me the motivation to learn a how to conduct studies in a new field of medical research; medical education. I am motivated to find out how we, as osteopathic faculty, can influence our

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students to think critically and how to rule in and rule out potential causes of human disease.

Since I work at an osteopathic medical school I am also interested in determining how the curricula at osteopathic medical schools can promote or deter medical students from utilizing OMT in their practices and how OMT can affect infectious diseases. We have just finished a pilot study to refine a questionnaire to determine osteopathic medical students' attitudes and beliefs concerning the use of OMT in their future practices. We are currently analyzing the data from a survey of matriculating osteopathic medical students at 10 different osteopathic medical schools to see what their views are on OMT before they begin their studies in medical school. We hope this study will help osteopathic medical schools find ways to enhance their curricula to encourage osteopathic medical students to utilize OMT in their clinical practices. I and my colleagues have presented posters, and published papers in osteopathic medical education. We have obtained funding from the AACOM to further our studies. I hope to someday help others see, as I did 5 years ago, how important the faculties are in shaping our future osteopathic physicians and how their approach to educating medical students can enhance the quality of our healthcare.

Structured Abstracts

William Search, Microbiology Department

Theme: Effect of Case Presentations on Medical Students' Performance in a Medical Microbiology and Infectious Diseases Course

Research Question 1 and 2: Can requiring medical students to present a clinical case to their peers and professors improve the students' performance on a case based final exam in an Infectious Diseases Course? Can presenting patient cases improve the students' ability to think critically and rule in and rule out causes of the patient's illness?

Investigation: (2007-2009) We used a case presentation approach to see if student felt that they could improve their critical thinking skills and could then enhance their performance on case based multiple choice examinations.

Methods: Students were divided into groups of 6 medical students. Each student was then given a case (6 cases in the room; one case per student) and given 10 minutes to present the case. Each student then presented the case to their peers. This exercise was repeated 3 times each in our Medical Microbiology and Infectious Disease courses. After each exercise the students were asked to reflect on their progress in presenting the case and ruling in and ruling out the potential causes of their patient's illness. The final examinations were averaged for two classes that had been given these exercises and compared to two classes that had not been given these exercises. The four classes all had similar undergraduate GPA's and MCAT score averages.

Results & Impact of Findings: We found that students who had presented their clinical cases were much more confident in time when ruling in and ruling out the causes of a patient's illness. This was evident in the fact that the students that had experienced the clinical case presentations had higher final examination grade averages than the students that did not participate in the clinical case presentations.

Contributorship:

- Dr. B. Bob collaborated in the development of the clinical cases, gathered data, and wrote and edited the abstract for the poster.
- Dr. T. K. Prescor collaborated in the development of the clinical cases.
- Dr. M. Stewart analyzed the data.

Dissemination 1: M. Stewart, T.K. Prescor, B. Bob, W. Search. Microbiology for Medical Students: A Case Presentations Model. The General Meeting of the American Society for Microbiology, 109th General meeting in Philadelphia, PA. May 17-21, 2008.

Dissemination 2: M. Stewart, T.K. Prescor, B. Bob, W. Search. 2009. Microbiology for Medical Students: A Case Presentations Model. JIAMSE, 19:480-485.

Theme: Effect of OMT curricula on students' willingness to use OMT in their future practices

Research Question 1: How can curricula be modified to encourage the use of OMT?

Investigation: (2005-2007) This investigation was conducted to see if the first two years of medical school was adequate in preparing our students to see osteopathic lesions and suggest treatments for those abnormalities. We used a virtual web-based pneumonia patient with noted osteopathic lesions and asked them to provide a SOAP note. The SOAP notes were examined to see if they identified the osteopathic lesions and suggested an appropriate OMM therapy. We then wanted to see if this preparation would sustain them through the first 6 months of their clinical years enough to elicit an OMM treatment plan in a standardized patient with COPD.

Methods: During their 3rd and 5th quarters of medical school each student was given a virtual patient that included certain appropriate osteopathic lesions. They were asked to write a SOAP note for both patients and the notes were examined by a licensed specialist in OPP to see if they found the osteopathic lesions and if they suggested an appropriate treatment for the lesions. After 6 months in the clinics the students were given a standardized patient with COPD and asked to write a SOAP note. These notes were then examined as above for the inclusion of osteopathic lesions and suggestions for OMM. The students were then asked during graduation what diseases they would treat with OMT. Those responses were then analyzed to see which diseases these graduates would still diagnosis and treat with OMM.

Results & Impact of Findings: The study revealed that the students were adequately prepared to see and suggest treatments for osteopathic lesions by the beginning of their 2nd year in medical school (5th quarter). However, within 6 months of clinical experiences very few if any chose to identify and treat a COPD patient with osteopathic lesions. The senior questionnaire revealed that these students were still willing to use their OMM skills in diagnosis and treatment but only with a limited number of the diseases listed.

Contributorship:

- Dr. H.A. Yates designed the osteopathic findings and graded the students SOAP notes when they described the use of OMM to treat the virtual patients.

Dissemination 1: Presented the following poster - W. Search and H.A. Yates. A prospective study of osteopathic medical students' attitudes toward use of osteopathic manipulative treatment in caring for patients. Central Group of Educational Affairs, Association of American Medical Colleges, Spring Meeting, March 25-28, 2006, Kansas City, Missouri.

Dissemination 2: W. Search and H.A. Yates. 2007. A prospective study of osteopathic medical students' attitudes toward use of osteopathic manipulative treatment in caring for patients. JAOA. Oct;103(10):470-8.

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Research Question 2: How can curricula be modified to encourage the use of OMT?

Investigation: (2008-2009) This investigation was conducted following funding by AACOM to refine a questionnaire to measure medical students' beliefs and attitudes concerning OTM.

Methods: During the fall of 2008 a questionnaire was developed and then disseminated by the Internet to 1st and 2nd year medical students at four different medical schools in the mid-West. Four different focus groups were then conducted to clarify any confusing questions. The results of the study were then analyzed to determine if there were any differences between 1st and 2nd year students in regards to their willingness to use OTM in their future practices and to see if OTM friendly students select osteopathic medical schools based on the perception that the school they chose was better at teaching OTM.

Results & Impact of Findings: The study revealed that the students did appear to select a medical school based on how well it prepared students to utilize OTM. It also demonstrated that 2nd year students are less willing to utilize OTM in their future medical practices than 1st year medical students.

Contributorship:

- B. Draper created the questionnaire and conducted the focus groups.
- J. Johnson did the statistical analysis.

Dissemination 1: A Poster was presented B. Draper, J. Johnson and W. Search. Preparation of a Questionnaire to Determine Medical Students' Beliefs and Attitudes Toward Utilization of OTM in Their Practices. AACOM annual meeting, April, 2008, Bethesda, Maryland.

Dissemination 2: A paper was submitted fall 2009 to the Journal of the American Osteopathic Association: B. Draper, J. Johnson and W. Search. 2009. Preparation of a Questionnaire to Determine Medical Students' Beliefs and Attitudes Toward Utilization of OTM in Their Practices.