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Short communication

# Introduction of a capstone research program in a new college of pharmacy: Student perceptions

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## Abstract

*Background:* A capstone research project requirement was completed by fourth-year professional students at this college during the 2011–2012 school year.
*Objectives:* To (1) ascertain the students' perceived value of research in a Doctor of Pharmacy program; (2) assess students' attitudes regarding level of guidance and preparedness during the research project; and (3) evaluate the perceived impact of the program on students' research abilities after completion.
*Methods:* An anonymous survey was administered to graduating professional students. This survey consisted of 18 multiple-choice items (progressive Likert-type scales with ten response options and close-ended) and an additional section for comments. Data were analyzed using PASW version 18.0.
*Results:* Ninety-two percent ($n = 65$) of students completed the survey. The majority (76.9%) are entering entry-level positions, while 13.78% are pursuing residency/fellowship training. The overall response mean for students' perceptions of the importance of research-related activities in their PharmD education was 2.9. The response means for guidance from mentors and preparedness received in the curriculum was 3.1 and 2.4, respectively. Overall, the majority of students felt that they are able to present a research poster at a local or national meeting and write a research manuscript in the future (69.2% and 72.3%, respectively).
*Conclusions:* This study demonstrated that graduating fourth-year students in this new pharmacy program do not believe research is an important component in the PharmD curriculum. While the students feel that they are prepared to participate in scholarly activities, their perception of the value of performing research was not important.


*Keywords:* Capstone research project; Research program; Fourth professional year; New pharmacy program; Student perceptions

## Introduction

Scholarship has been recognized as a key element in the education of student pharmacists. According to the Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree (version 2.0), pharmacy curricula should include content about the "fundamentals of research design and

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methodology," "principles of evaluation of the primary literature," and "practical implications of the primary literature" so that graduates are able to apply relevant information appropriately in their patient care decision making.[1] The American Association of Colleges of Pharmacy (AACP) has conveyed the criticality of continued cultivation of "scholarly thinking" and the "attitude of inquisitiveness" amongst student pharmacists, as well as ensuring that pharmacy faculty are equipped to be role models for scholarly behavior.[2] In 2006, the American College of Clinical Pharmacy (ACCP) identified professional challenges and opportunities of clinical pharmacists being recognized as sound investigators and scholars, including increased involvement in research and exposure to research careers within professional programs.[3] Subsequently in 2010, an ACCP Task Force on Research in the Professional Curriculum identified essential curriculum content for PharmD degree programs and acknowledged the completion of a capstone project as one example of a successful strategy to deliver research content and simultaneously encourage students to pursue additional postgraduate opportunities; other successful strategies included didactic coursework (with an emphasis on research methods, ethics, biostatistics, etc.) as well as experiential learning opportunities (advanced pharmacy professional experiences).[4] In 2011, the National Institutes of Health (NIH) also adopted a website that supports research training to engage pharmacists in translational research that can improve clinical outcomes.[5]

Most, if not all, colleges of pharmacy require students to complete coursework related to research methods, statistics, and drug information/literature evaluation.[6,7] However, in 2009 it was reported that only 13% of programs require completion of a student research project.[6] Data collected approximately ten years prior indicated that the percentage of programs that required completion of a student research project were comparable.[7] Previous research indicates that students generally have positive perceptions with regard to completion of research projects as a valuable learning experience. Differences have been reported with regard to its applicability and relevance to students who pursue postgraduate opportunities versus those students who enter the workforce.[8–12] Surratt et al.[8] evaluated student feedback and experiences on an elective research track concentration within a Doctor of Pharmacy program, and preliminary feedback suggests that the program may have significantly influenced students in pursuing postgraduate opportunities with an emphasis in research. Research-focused experiences can provide student pharmacists with a worthwhile perspective relative to careers in the clinical and basic sciences.[10] In one survey, the completion of a required senior research project was perceived as most valuable to students who pursue a residency or fellowship upon completion of the PharmD.[11] Other students who participated in a capstone advanced pharmacy practice experience at Southern Illinois University at Edwardsville indicated that their experience in this research-related course allowed them to apply their knowledge to a "real-world situation."[12] Additionally, Ramsauer[9] reported that a research-based elective didactic course focusing on the development of skills pertaining to literature search/evaluation, hypothesis formulation, research methods, data collection, and scholarship (seminar presentation), most likely contributed to increased problem-solving skills as well as an overall appreciation of the complex process of research.

The vision of Chicago State University is to be recognized for "its impact on the health care needs of diverse populations through its contributions in education, training, scholarship, service, and research."[13] Furthermore, "analytical thinking, ethical reasoning and decision making," as well as "intellectual curiosity," are attributes that the college strives to embed purposefully throughout its curriculum. In 2011, a capstone research project became a requirement at the college to allow fourth-year professional students to apply and integrate knowledge learned throughout the curriculum through the synthesis of a research project. This requirement coincided with a university-wide requirement that undergraduates admitted to the university effective Fall 2010 complete a senior thesis (project/research paper) as defined by the student's program of study to satisfy one of the culminating university requirements for graduation. A total of 21 mentors participated in coordinating capstone research projects.

Submission of projects for publication and/or external poster presentations was not a requirement of the program; however, it was highly encouraged. To successfully pass, students were required to submit a manuscript suitable for publication, as well as create and display their work in a formal poster presentation. Throughout the project, students were formatively assessed by their faculty mentors through student completion of progress reports (adherence to the students' established timeline, adherence to project goals, etc.). At the completion of the project, students were both formally evaluated on the manuscript by their faculty mentor, as well as the poster presentation by faculty members and their faculty mentor to ensure that all competencies were met. Summative grading rubrics were utilized to evaluate the manuscript and poster.

During the spring semester prior to the start of the fourth professional year, students attended two mandatory workshops (totaling approximately four contact hours) to prepare for success in the program. Topics included project overview and expectations, the role of the institutional review board (IRB), human subjects protection training, and other relevant subject matter. Once the projects were initiated, additional mandatory workshops (totaling approximately two contact hours) were given to provide more guidance to the students in preparing their manuscripts and posters. Research projects included, but were not limited to, laboratory research, clinical research, educational research, business plan development, and drug utilization review; additionally, it was required that projects be either related to