

AACP REPORTS

Pharmacy Scholarship Reconsidered: The Report of the 2003-2004 Research and Graduate Affairs Committee

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According to the Bylaws of the AACP, the Research and Graduate Affairs Committee shall provide assistance to the Association in developing its research, graduate education, and scholarship agenda. This assistance may include facilitating colleges and schools in formulating and advancing legislative and regulatory initiatives and nurturing collaborative activities with organizations sharing an interest in issues related to the pharmaceutical sciences.

Consistent with a theme of exploring how AACP might foster organizational improvement and success among its institutional members, President-elect Robert A. (Buzz) Kerr asked the 2003–04 AACP Research and Graduate Affairs Committee to:

- Review the paper in the AACP “excellence series” on developing and sustaining a culture of research and scholarship for both individual faculty and a college/school as a whole to support quality pharmaceutical education, and identify key suggestions and information to forward for consideration by ACPE in the accreditation standards and guidelines revision process.
- Suggest appropriate program assessment measures, indicators, and processes that guide institutions in responding to, “How do you know if you have a culture of research and scholarship that supports a quality professional education program?” The model should incorporate the results of institutional research as evidence of effectiveness or indicators of needed change in a continuous quality improvement environment.
- Suggest appropriate quantitative assessment measures or indicators of the performance of the research mission and graduate degree programs and fellowships in the pharmaceutical and clinical sciences that can serve as evidence for effective-

ness and/or indicators of comparative performance with other institutions.

A CULTURE OF SCHOLARSHIP

The Excellence Paper. The excellence paper, “Developing and Sustaining a Culture of Scholarship,” written by Dr. Richard H. Kennedy and colleagues from the University of Arkansas did a thorough job in defining the historical emergence of research and scholarship in American higher education and pharmacy education.¹ The authors reviewed Dr. Ernest L. Boyer’s expanded definition of scholarship provided in his seminal Carnegie Foundation for the Advancement of Teaching report, “Scholarship Reconsidered: Priorities of the Professoriate.”² The authors dealt with measures of scholarship, the role of scholarship in the promotion and tenure process, and offered opinions as to why scholarship in the pharmacy academy was important for professional education. They recognized the importance of scholarship to an institution’s reputation both within the university community and among peer institutions. They noted that there is no published evidence that certain quantitative measures of scholarly activities such as funding and publications are positively correlated with measure of teaching effectiveness, primarily student evaluations. The authors recommended to both AACP and ACPE to “support and engage in a serious analysis of the impact of research on teaching quality, as well as the question of whether students are more or less served by colleges/schools with strong research programs.”

The entire excellence paper series and the scholarship of excellence paper in particular were commissioned by the AACP Board of Directors (BOD) to stimulate academy discussion and action on the selected topics and to assist the Accreditation Council for Pharmacy

Education (ACPE) in the next Pharm.D. program accreditation standard and guidelines review and revision process for the professional degree program. Given the diversity of individual membership and institutional missions within the pharmacy academy, and the paucity of “proof” for linking traditional measures of scholarship and teaching outcomes, the excellence paper authors declined to identify a threshold for scholarship or scholarly activity for every college/school of pharmacy, positing that this would serve to divide rather than unify the academy.

The following RGAC report cannot provide the academy with definitive answers to all the questions addressed to the committee, nor provide a definitive list of indicators for a culture of scholarship. This report continues the dialog begun with the publication of the excellence paper and that discussion should be continued at future AACP meetings, within AACP member institutions, and among members of the academy. These questions are fundamental to the strength and vitality of each college/school of pharmacy and the entire pharmacy academy.

Defining A Culture Of Scholarship. President Kerr charged the RGAC with defining a culture of scholarship and recommending measures of its presence or absence in an institution that could be used in an institutional self-study and accreditation process. Thus, the committee tasks included:

- Defining the concept of a Culture of Scholarship;
- Describing why a Culture of Scholarship is important for a college/school of pharmacy, faculty, students, and the profession;
- Identifying quantitative and qualitative indicators of a Culture of Scholarship for internal (self-study) and external review (self-review or accreditation); and
- Recommending AACP-sponsored activities to assist member institutions to develop or enhance a Culture of Scholarship.

Additionally, the committee was requested to recommend methods or measures for assessing the quality of an institution’s research and graduate education enterprise (ie, MS and PhD programs, residencies, fellowships, and postdoctoral programs).

Culture. The word culture has multiple meanings and interpretations and these meanings have changed over time. The contemporary definition of culture arises from the areas of anthropology and ethnography. Culture has at least three components: what people think, what they do, and the products they produce. Culture also has

several properties: it is shared, learned, symbolic, transmitted cross-generationally, adaptive, and integrated. Culture is:

- **Learned** through a process of enculturation,
- **Shared** by the members of the group or society,
- **Symbolic** such that language and thought are based on symbols and symbolic meanings, and
- **Mutually constructed** through a process of social interaction.³

Everyone is part of more than one culture (eg, as citizens of the United States, perhaps as members of a community of believers, faculty of a college/school of pharmacy and the college/university of which it is a part, and the entire academic pharmacy community). From the previous definition, it is obvious that a culture is constructed by the relevant society, shared among the members, and learned by those who become part of that society. Therefore, if the academy believes a “culture of scholarship” is important and desirable, a societal effort must be made to make it real and measurable. In a society (the academy) whose members value independence of thought and action, this calls for significant and ongoing effort to mutually construct a framework or outline of a culture that is shared by its members. Differences in culture will always exist among our colleges/schools, as each is part of a larger academic environment with its own culture, and can either be symbiotic or antagonistic, thereby influencing the overall educational environment. If the academy chooses that a culture of scholarship become an integral part of the accreditation process, it must mutually construct the qualitative and quantitative indicators of the culture it wishes all members to exhibit. The entire academy should be in agreement on the qualitative indicators, but should be aware that the quantitative measures of those indicators will vary among institutions depending on their respective environments and missions. Members also need to individually address whether or not the current culture(s) existing in their institutions are supportive of the primary mission of pharmacy education.

Scholarship. The authors of the scholarship excellence paper performed a valuable service by reviewing Boyer’s expanded definition of scholarship, introducing his ideas to the many new faculty that have joined the academy since the release of the report in 1990. Boyer expanded the definition of scholarship beyond the traditional view of research, or the scholarship of discovery as originally defined. A large portion of the academic community, including pharmacy, embraced Boyer’s views of scholarship, upon publication of the report. The AACP Academic Affairs Committee,⁴ the Research and

Graduate Affairs Committee,⁵ and the Commission to Implement Change in Pharmacy Education,⁶ encouraged colleges and schools of pharmacy to expand their traditional definition of research to include the expanded view elaborated in Boyer's report, particularly in the processes of promotion and tenure. Boyer's definitions continue to be debated within the higher education community, including in the health sciences, where clinical practitioners play an increasing role in the educational preparation of health practitioners.⁷⁻⁹

The authors of the excellence paper summarized the definition of scholarship of Boyer and others as the "creation, discovery, advancement, or transformation of knowledge" characterized by the "elements of originality, creativity, peer review, and communication."¹ These indicators of scholarship, if acceptable, must be translated into qualitative and quantitative metrics that can be more precisely defined and measured. If a series of metrics can be agreed upon by the academy as indicators of scholarship, it will be up to each institution to decide the specific quantitative measures they will use to define the necessary level of attainment of these elements for purposes of promotion and/or tenure, and what level of attainment is sufficient for meeting accreditation standards and guidelines.

AACP's Position on Faculty Scholarship and a Culture of Scholarship

Following the 1980 AACP Argus Committee report, "Faculty scholarship and research: Their importance to the future of pharmacy education,"¹⁰ other AACP standing committees made a series of policy recommendations regarding the importance of faculty scholarship, including the then new "clinical" faculty. The importance of scholarship to the academy was ultimately summarized in a policy statement offered by the 1994-95 RGAC¹¹ that was accepted by the HOD, and became AACP official policy:

AACP affirms the importance of research to the pharmacy profession and the pharmacy education enterprise. Furthermore, AACP affirms that every full-time faculty member is expected to participate in the generation and/or application of new knowledge and its dissemination to an extent consistent with the mission of the school or college.

In addition to affirming the importance of individual faculty scholarship, the pharmacy academy has also addressed the issue of developing a "culture" of, or supporting an environment for, scholarship in its member institutions. In 1987, the Academic Affairs Committee stated, "College administration has the responsibility of developing an environment which fosters scholarly pur-

suits among the faculty."¹² The 1998-99 RGAC recommended, "AACP should provide programming to assist deans and department chairs to develop a supportive research culture in the areas of pharmacy practice and social, behavioral, economic, and administrative sciences at their institutions."¹³ Interestingly, these two committees, plus the authors of the excellence paper suggested that much of the responsibility for developing and sustaining a culture of scholarship rests with college administration, specifically for providing adequate resources (financial, space, equipment, faculty) and faculty time for scholarship. College administrators, particularly deans, do have a significant impact on institutional culture(s), but it is questionable whether a culture of scholarship can be imposed on a faculty.

During the 1970s-80s, the rapid rise in the number of "practice" faculty was viewed as a potential impediment to the collective scholarship of the pharmacy academy¹⁴ despite evidence that the collective scholarship of the non-practice faculty was itself not all that significant in 1980.¹⁰ The conversion to the Pharm.D. degree during the 1990s was viewed by some as potentially damaging to institutional research productivity and scholarship, because of the significant financial resources necessary to expand practice sites and hire practice faculty.¹¹ However, the introduction of clinical practice faculty in the 1970s and 80s, and the switch to the Pharm.D. degree has had no significant effect on the collective scholarship of the pharmaceutical sciences faculty, as evidenced by continually increasing NIH research support.¹⁵ What has occurred is a widening disparity in the scholarly productivity of pharmaceutical sciences and pharmacy practice faculty, resulting in multiple cultures of scholarship in many institutions. The disparity has been further exacerbated by the increasing use of non-tenure track appointments for practice faculty.^{16,17} The increased use of non-tenure track positions for faculty whose primary responsibilities are clinical service and instruction may be to the individual faculty member's long-term benefit in some university settings, but institutional leadership must be exerted to insure that the growing number of practice faculty contribute to the institution's culture of scholarship.

While the pharmacy academy has always recognized diversity of mission among its members, including diversity in the relative focus on "teaching" vs "research," the academy has consistently stated over the past three decades that universal scholarship is integral to its continued vitality and viability. There is rising concern however, about a potential diminution of the academy's collective scholarship, particularly in the area of

the scholarship of discovery, because of the increasing numbers of new pharmacy programs at institutions with an unknown culture of scholarship.

ACPE's Position on Scholarship and a Culture of Scholarship

ACPE's major responsibility is to insure the quality of pharmacy education at AACP member institutions. Regular and associate institutional membership in AACP requires full, candidate, or pre-candidate accreditation status with ACPE. The AACP BOD recommends candidates for membership on the ACPE board, although the three AACP members do not take any direction for ACPE policy from the BOD. Given the interrelationships between AACP and ACPE, does ACPE have similar views of the importance of scholarship to the enterprise of pharmacy education as AACP? The answer to that question was both yes and no.

ACPE Accreditation Guidelines state that faculty scholarship and a positive environment for scholarship are considered in accreditation.¹⁸ Guideline 25.2 states:

Faculty should have a responsibility to generate and disseminate knowledge through scholarship, whether or not graduate education is a component of the College or School's mission. Scholarship, including the scholarship of teaching, should be evident and demonstrated by productive research and scholarly activities, such as contributions to the scientific, professional, and educational literature, publication of books and review articles, and successes in securing extramural funding in support of research and scholarly activities. The College or School should foster an environment that encourages contributions by the faculty to the development and transmission of new knowledge, and should contribute to the advancement of knowledge and to the intellectual growth of students through scholarship. The College or School is encouraged to provide, or be affiliated with institutions that provide, residency and fellowship programs.

Additionally, Standard 24 states:

The College or School should have an organized professional development program for full-time, part-time, and voluntary faculty, consistent with their respective responsibilities and should demonstrate the effectiveness of this professional development program. *The professional development program should enhance teaching and assessment skills and should assist faculty in efforts to become and remain productive scholars (italics added).* Additionally, the professional development program should support the acquisition of skills needed for teaching diverse learners.

The ACPE Standards and Guidelines address the importance of faculty and institutional scholarship and

the standards support an environment or culture of scholarship as important in accreditation. However, it was the view of the committee that these scholarship standards and guidelines are not seriously addressed in the accreditation process and therefore do not appear to enter into accreditation decisions. The ACPE practice of tailoring site visitation teams of individuals from like institutions, further contributes to the perception that faculty scholarship or maintaining an environment of institutional scholarship is not viewed as contributing to the quality of the professional degree program. If faculty scholarship and a culture of scholarship are perceived as not important for the accreditation of established programs, the committee questions how ACPE deals with the issue of scholarship and culture of scholarship during the pre-candidate and candidate stages of accreditation at newly emerging pharmacy programs. The committee recognizes that faculty or institutional scholarship requires time and financial resources to develop at new programs, but faculty scholarship and an institutional culture of scholarship must be part of an institution's initial mission and strategic plan.

Scholarship Metrics. AACP and ACPE agree that faculty and institutional scholarship/research is important for a quality professional education program. ACPE does collect faculty information for the accreditation process, but it is not organized in a useful format to evaluate faculty scholarship or a culture of scholarship. The RGAC was charged with identifying measurable indicators that can assist in determining whether an institution has a culture of scholarship supportive of a quality professional education program. Although the value of any particular metric can be debated, the higher education community is familiar with using multiple indicators to assess scholarship. Indeed, publications and extramural funding success are specifically mentioned in the present ACPE Standards.

The Association of American Medical Colleges (AAMC), through its mission-based management program, commissioned several committees to develop metrics for benchmarks in each of the mission areas. The Research Panel (The Panel) of the Mission-based Management Program addressed and assessed the relative value of metric systems, including weighting factors, for managing the research mission.¹⁹ The Panel's publication provides an excellent discussion of the rationale, problems, and issues associated with several metrics. The Panel suggested measurements for four general areas dealing with the research (scholarship) mission that can be applied to an individual, a division/department, or the institution. The RGAC offers the

AAMC panel's metrics as potentially useful indicators for ACPE (Appendix 1).

The Panel declined to assign points to any of their metrics, believing that this was a matter for each individual institution to decide. The Panel also pointed out that any metric system is to be considered a tool to inform leadership and designed to help shape judgment. The Panel further cautioned that metrics should never be considered a substitute for judgment.

The University of California at Davis Medical School has applied the AAMC mission-based approach to management with respect to the teaching, research, clinical practice, and service functions of its faculty and departments. The process and utilization of weighted metrics to assess the functions of the institution serve as an example how a set of measurement indicators such as those proposed by the AAMC panel can be developed and utilized in an institutional self-study and accreditation process.^{20,21}

Scholarship vis-à-vis a Culture of Scholarship. Is an institutional culture of scholarship different than productive scholarship, the latter measured by numbers of publications, citations, external grant support, and other commonly accepted measures of scholarly output? At a research-intensive university, productive scholarship and a culture of scholarship may be viewed as the same entity. However, what may be more relevant and important to the individual college/school is whether all the faculty, students (professional and graduate), and postgraduate fellows (postdoctoral fellows, residents) perceive and experience an institutional culture of scholarship (Appendix 2).

Culture is mutually constructed through social contact, and then transmitted to those joining the culture (enculturation). The indicators in Appendix 2 are focused on determining whether social contact is occurring in the entire institution with all stakeholders around the issue of scholarship, which is necessary for a culture to develop. If this social contact does not take place, what can and does occur is the development of several dominant institutional cultures, within departments or within a specific faculty member's laboratory, often with characteristics that are not mutually supportive and which may be detrimental to the institution and its students.

The Importance of Scholarship and a Culture of Scholarship in Educating Students for the Practice of Pharmacy

Although AACP and ACPE have recognized the importance of scholarship and a culture of scholarship in accreditation of professional programs, justification for these positions is offered to stimulate continuing dialog

on these important topics. The 1980 Argus Committee and the Commission to Implement Change in Pharmacy Education identified several reasons why scholarship must be an integral part of academic pharmacy.

- Generating and disseminating new knowledge about drugs, drug products, drug use, etc.,
- Maintaining the vitality or expertise of the faculty,
- Insuring life-long learning in graduates by exposure to scholarly philosophies and principles and to the most current understanding of scientific knowledge, and
- Differentiating pharmacy as a profession rather than as a technical skill.

The first two reasons, generating and disseminating new knowledge, and maintaining faculty expertise are generally accepted roles of scholarship in the higher education community. Publications and extramural funding are essential, particularly for faculty at college/schools of pharmacy located within research-intensive university environments. The presence of colleges/school of pharmacy on research-intensive university campuses, often within academic health centers, speaks to the value and quality of pharmacy faculty scholarship, and also provides pharmacy legitimacy as a profession. If our colleges/schools no longer supported scholarly activity, the most capable of our research faculty would find other academic or industrial positions, and the research needed to discover new drugs, drug products, and therapies would continue unabated in other academic and industrial venues. The elimination of colleges/schools of pharmacy from research-intensive state university campuses may then occur, with movement of programs, if necessary, to other non-research intensive state and private institutions or to training institutes. There would be a concomitant loss of pharmacy's place as a health care profession, unraveling over a century of striving to achieve recognition and respect as a significant contributor to the public's health.

Even though pharmaceutical sciences faculty scholarship contributes to drug and drug product discovery and development and provides academic pharmacy a legitimate place on research-intensive university campuses, much of this research does not significantly contribute to a "unique" body of pharmacy-related knowledge, an essential requisite for a profession. A large portion of externally-funded pharmacy faculty research is similar to that of faculty in colleges/schools of medicine, and departments of chemistry, molecular biology, and bioengineering. What is the "unique" body of knowledge that distinguishes pharmacy as a profession? The Change Commission addressed this issue as follows:

“The provision of pharmaceutical care to patients requires an understanding of the chemistry of drug entities, the delivery characteristics of dosage formulations, the disposition of drugs within the body, and the physiologic and pharmacologic outcomes of drugs’ interactions within the biologic organism. What makes pharmacists unique among health care providers is a detailed and comprehensive understanding of the implications of these physical, chemical, and biological interactions on the outcomes of drug therapy.”²²

According to the Change Commission, the unique contribution of pharmacists is to make connections and integrate knowledge across disciplines, placing this knowledge in the context of the most appropriate drug therapy for an individual patient or a population of patients. In providing pharmaceutical care (taking responsibility for patient outcomes related to drug therapy), the practitioner must just not understand concepts, they must apply relevant pharmacological knowledge associated with drug(s), drug delivery systems, and the physiology/pathophysiology of a specific patient to solving real or potentially consequential drug-related problems. If pharmaceutical care is successful, the outcomes of drug therapy in individuals or populations of patients will be significantly better than if the pharmacist did not undertake these actions. In essence, pharmacists practicing pharmaceutical care are performing what Boyer defines as the “scholarship of application.”²² If our graduates must practice the scholarship of application to provide pharmaceutical care (scholarly practice), then they must be educated within a culture of scholarship by scholars, particularly the practice faculty and the social, economic, and administrative sciences, as these disciplines, along with pharmaceuticals, are the “unique” components of a pharmacy education and practice. Unfortunately, practice faculty have struggled to achieve status as scholars in the academy, and as a consequence, the research demonstrating the unique contribution of pharmacists and pharmaceutical care to patient outcomes has been inadequate,^{23,24} which in the long-term, if uncorrected, may undermine the status of pharmacy as a health care profession.

There are many reasons for the paucity of scholarship from practice faculty, including inadequate preparation to perform research, significant patient-care and instructional responsibilities, inadequate financial, space, and personnel resources, and a lack of effective mentoring, particularly for entry-level female practice faculty to develop and sustain a program of scholarship.²⁵ In some institutions, practice faculty relieve more “productive” pharmaceutical sciences faculty from

teaching responsibilities in order to maintain institutional revenue from sponsored-research grants. Exclusive use of non-tenured positions for practice faculty may also serve to undermine the necessity for the scholarship required to develop a “unique” body of knowledge for the profession, if non-tenured faculty are not eligible for support of scholarship activities and benefits accorded tenure-track faculty.^{17,26} The pharmacy academy and the profession of pharmacy have significantly benefited from the support and productivity of significant numbers of pharmaceutical sciences faculty. That support must continue to be strong and grow, but the academy and the accreditation process must address the significant disparity in scholarship and cultures of scholarship between the two components of the academy, the sciences and practice. This is not only important for the respect accorded pharmacy programs on university campuses, but also for the continued development and improvement of our practice faculty as academic scholars and our professional degree students as scholar-practitioners.

Scholarship and A Culture of Learning. What is the support for the concept that in order to provide pharmaceutical care, pharmacists must practice the scholarship of application, and therefore must be educated by practicing scholars within a culture of scholarship?

The dichotomy of scholarship and teaching complicates the argument for insisting on a culture of scholarship as being an important contributor to faculty teaching and student learning. While many faculty reject Boyer’s definition of teaching as scholarship, most faculty believe that scholarly activities contribute to faculty expertise, which in turn, contributes to more effective classroom teaching, ergo, the best scholars (researchers) are the best teachers. Unfortunately, attempts to demonstrate a positive correlation between scholarly productivity and teaching effectiveness have failed.²⁷

The lack of evidence of a positive correlation between teaching and research has stimulated considerable interest in the United States as it has in the United Kingdom (UK) and Australia, where there is renewed interest to strengthening what is referred to as the teaching-research nexus.^{27,28} A reason for working to strengthen the nexus is “to reassess and redefine the roles of teachers and students in the development of a culture of critical enquiry in higher education” and “what is required is not that students become masters of bodies of thought, but that they are enabled to begin to experience the space and challenge of open, critical enquiry.” The UK and Australian educators believe that faculty research improves student learning, but does not occur automatically, and must be engineered or purposefully created.

John Bowden and Ference Marton in, "The University of Learning: Beyond Quality and Competence in Higher Education" argue that the university in the 21st century must move beyond a University of Teaching and Research to a University of Learning.²⁹ The authors state that institutional places of learning, such as the university, are to prepare students for handling situations (problems) in the future, more or less unknown, with what is known at present. They state, "For all professions, the pace of technological change and the shifts in the nature of the relationships between professionals and clients mean that a narrowly based professional education that focuses on skills in particular practices will not serve the individual well for very long." This certainly applies to all health care practitioners, including pharmacists.

Bowden and Marton remove the distinction between traditional teaching and research by redefining the function of the university as a place of learning. Student learning is the act of creating knowledge that is new to them (individual learning), although it is not new to others. The student's individual learning is not dissimilar to the faculty scholar creating knowledge that is new to them and to the collective community as well. In creating new knowledge, the student scholar and faculty scholar are both widening their ways of viewing the world, each changing their borders between ignorance and knowledge. The faculty scholar increases collective knowledge by communication (publication) of their new individual knowledge, and widening or changing (paradigm shifting) the collective view of the world. Certainly, attempting to find out something nobody has found previously (research) is different from trying to find out what somebody has found out earlier (student), but the process of discovering new knowledge (absolute or relative) has many similarities. Thus, the learning environment for both the faculty and student must have common elements.

Marcia Baxter-Magolda initiated a study of 101 young adults entering as freshman at the University of Miami in Ohio in 1986 to attempt to determine learning and intellectual development during college, which she published in 1992.³⁰ The author continued her interviews with 39 of the original cohort through their twenties. Many of these students pursued graduate and professional education upon graduation. In a following publication,³¹ Baxter-Magolda describes these former undergraduate students' transformation to self-authorship, defined "as the ability to collect, interpret, and analyze information and reflect on one's own beliefs in order to form judgments." She found that most students do not

develop self-authorship in college, because most educational experiences are not designed to promote it. The author argues that colleges/universities must create contexts to assist students in developing self-authorship and that the following three assumptions must be present in educational settings to promote self-authorship.

1. Knowledge is socially constructed and complex,
2. Self is central to knowledge construction, and
3. Authority and expertise are shared in the mutual construction of knowledge among peers.

The author posits that one possible reason for the long-standing dominance of knowledge acquisition instead of active knowledge construction is the belief that students learn to construct knowledge by learning disciplinary content, which an increasing amount of research has demonstrated to be a myth. The assumption that students cannot engage in knowledge construction until they have memorized all the foundational content of a discipline suggests that learners have no relevant experience or knowledge to bring to the learning enterprise. Pedagogy that supports self-authorship guides learners in developing a framework for knowing so that they can develop their own beliefs, implement them in their professional practice, and refine them as their experience and knowledge evolves. If knowledge construction and thinking are not developed using an exploration model, students end up "knowing it but not understanding it," and quickly forget it upon conclusion of the test or course.

In the expanded edition of "How People Learn: Brain, Mind, Experience, and School," the Committee on Development in the Science and Learning of the National Research Council organized what is known about how individuals learn and recommend how these understandings can be used to optimize teaching strategies and learning environments.³² The recommendations are as applicable for K-12 as they are to higher education environments. The report highlights three findings that are research-based, and have implications for teaching and learning. They are:

1. Students come to class with preconceptions of how the world works. This must be engaged and corrected if necessary in order to incorporate new concepts and information, or the new concepts and information will be forgotten.
2. To develop competence in an area, students must: a) have a deep foundation of factual knowledge, b) understand facts and ideas in the context of a conceptual framework, and c) organize knowledge in ways that facilitate retrieval and application.

3. A metacognitive approach to instruction can help students learn to take control (ie, self-knowledge) of their own learning by defining learning goals and monitoring their progress in achieving them. Metacognition is defined as the ability to monitor one's current level of understanding and decide when it is not adequate.

An increasing number of faculty are using the findings discussed in "How People Learn: Brain, Mind, Experience, and School," by incorporating inquiry-based teaching and learning into their courses. "The main idea of inquiry is for students to learn in the same way that scientists learn through research. Scientists ask questions, make observations, take measurements, analyze data, and repeat the process in an attempt to integrate new information (into existing information). Students should be taught the way scientists think about the world, and how they analyze a scientific problem in particular." "Participation in research by all students is a goal to which institutions should aspire."³³

These authors and committees have reached similar conclusions, in that to educate a person to successfully function as a contributing member of society and more specifically, a profession (ie, transformation to self-authorship), the person must be educated in an environment of inquiry, and enculturated into a culture of scholarship. These conclusions are not new to pharmacy, as Background Paper II of the Change Commission stated³⁴:

- The curriculum must instill in students the spirit of intellectual inquiry and curiosity and the motivation for learning, and equip students to learn throughout their professional lives.
- Graduates must exhibit the capacity to contribute as productive members of the profession and assume leadership roles as appropriate in the profession and in society.
- A number of the outcomes (of the educational process) cannot be taught by discrete courses; many are inculcated into students across the curriculum through a variety of techniques.
- A major responsibility of pharmacy educators is to shift the burden of learning from the teacher to the student.

Conclusion and Recommendations. The AACP House of Delegates approved Background Paper II in 1991, whose concepts and recommendations primarily addressed the desired competencies and appropriate learning environments for educating pharmacists. Background Paper II significantly influenced the current ACPE published Standards and Guidelines. What appears to have happened in the implementation of the

current ACPE Standards and Guidelines is that educating professional students within an institutional culture of scholarship to produce scholar-practitioners has either been ignored or perhaps, inadequately addressed. Alternatively, academic pharmacy was ahead of the curve in recognizing the primary importance of the entire learning environment in educating future professionals. The RGAC makes the following recommendations:

Recommendation 1: AACP should encourage ACPE to consolidate the existing Standards and Guidelines that address faculty scholarship and an institutional culture of scholarship, and specifically address these topics during the accreditation process.

Recommendation 2: AACP should encourage ACPE to expand the Accreditation Guideline and Self-Study Guide to include specific qualitative and quantitative indicators of faculty and institutional scholarship, and that these scholarship metrics be utilized during the professional program accreditation process to assist institutions in initiating and improving individual faculty scholarship and fostering an institutional culture of scholarship which positively impacts on the preparation of competent and capable pharmacy graduates.

Recommendation 3: AACP should convene a joint AACP-ACPE Task Force to develop the qualitative and quantitative indicators of faculty and institutional scholarship for the purposes of preparing the institutional self-study portion of the accreditation process.

Recommendation 4: AACP should develop programming to assist member institutions to initiate, maintain, improve, and assess an institutional culture of scholarship that positively impacts all the institution's educational programs (eg, professional, graduate, postdoctoral, and residency).

GRADUATE PROGRAM EVALUATION

The evaluation of an institutional research mission is important for all colleges/schools of pharmacy, not only those that offer a graduate degree (eg, MS, PhD). All professional degree students must be educated within an institutional culture of scholarship, by and with faculty who are scholars. Furthermore, all colleges/schools of pharmacy are being urged to include post-professional degree education and training (eg, residencies, fellowships) in their institutional missions, blurring the artificial distinction of teaching-intensive and research-intensive colleges/schools of pharmacy.³⁵ If all colleges/schools of

pharmacy are going to provide post-graduate education (degree or non-degree) in the near future, they will need to define the role of research/scholarship within the institution's educational mission(s), and ensure that the research mission is being met through periodic evaluations utilizing metrics that can be shared and compared with other peer institutions.

Dr. Jere Goyan, 1978–79 AACP President, appointed and chaired the first Special Committee on Research and Graduate Affairs, which became the present RGAC.³⁶ One of the special committee's recommendations was to urge AACP to consider holding a symposium on the subject, "What are the characteristics of good graduate programs as they apply to schools of pharmacy." Subsequent committees recommended that AACP encourage colleges/schools to implement periodic self-studies of their graduate programs. The 1982 RGAC proposed, and the House of Delegates approved, the following policy³⁷:

"AACP urges all member schools to undertake periodic rigorous examination of their research and scholarly activity with the objective of improving both quality and quantity. This examination should include not only self-study but also an evaluation by an appropriate team of external reviewers."

In 1985–86, AACP President, Jean P. Gagnon charged the RGAC to undertake a thorough examination of pharmacy graduate education programs and suggest specific and implementable recommendations for improving and maintaining their quality.³⁸ The committee began the work and recommended the formation of a Commission to undertake a comprehensive study of graduate education in the pharmaceutical sciences, which was funded in part by the American Foundation for Graduate Education (AFPE). This commission, commonly referred to as the Lemberger Commission, after its chair August Lemberger, was asked to:

1. Develop standards of quality and criteria for evaluation of graduate programs in the pharmaceutical sciences,
2. Develop guidelines for self-evaluation by colleges/schools of pharmacy, and
3. Establish voluntary programs for external review as part of self-evaluation.

The Lemberger Commission Study, "Graduate Education in the Pharmaceutical Sciences: The Quest for Quality," was published by AACP in February 1989.³⁹ The Lemberger Commission expressed concern about the lack of data relating to criteria of quality in evaluating graduate programs and concluded that self-evaluations will be greatly hampered by the lack of compar-

ative data for faculties to use in assessing strengths and weaknesses in their programs. The Lemberger Commission also recommended that AACP serve as coordinator of periodic data collection and dissemination regarding the status of graduate programs in the pharmaceutical sciences.

The Commission on the Future of Graduate Education in the Pharmaceutical Sciences (Graduate Education Commission), appointed by 1996–97 AACP President Charles O. Rutledge, reviewed the state of graduate education in the United States and pharmaceutical sciences graduate education in particular. The Graduate Education Commission made a series of recommendations including one which addresses graduate program evaluation:

"Graduate programs in the pharmaceutical sciences should establish, compile, and assess longitudinal databases of performance indicators to internally and externally assess faculty, student, and program quality. Sufficient data should be made public to assist potential graduate students to determine if the program is consistent with their research aspirations. A common set of performance indicator measures should be submitted annually to AACP for the purpose of constructing comparison college and school cohorts (benchmarks) for chairs and deans to evaluate and improve the performance of their graduate programs."⁴⁰

Both the Lemberger Commission and the Graduate Education Commission recommended that AACP collect a common set of metrics to assess graduate program status and quality.

Graduate Program Evaluation Models. Unlike undergraduate and professional degree and residency programs, there is no recognized accreditation process for graduate degree programs. Graduate degree programs are evaluated for quality, if at all, by the university in which they are located. The Federation of Associated Societies of Experimental Biology (FASEB) rejected the idea for a national accreditation program for graduate programs in the life sciences.⁴¹ While FASEB strongly supports self-study and periodic reviews of graduate programs at the local level, FASEB opposed national accreditation of graduate programs "because each program is unique; and national accreditation might lead to homogeneity of programs, which is undesirable, at the expense of diversity, which is desirable."

The Association of American Medical College's Graduate Research, Education, and Training (GREAT) Group began exploring methods to evaluate graduate programs in the biomedical sciences offered by United States medical colleges. The GREAT Group Task Force on Benchmarks of Success in Graduate Programs designed a

series of evaluation instruments to assist graduate programs in conducting a program self-study. The accompanying narrative with the GREAT Group evaluation forms states unequivocally that the program is not a prelude to graduate program accreditation.⁴² The survey instruments have been modified with permission of the GREAT Group for graduate programs in the pharmaceutical sciences and are available on the AACP Web site.⁴³

While not a national accrediting body, the National Research Council (NRC) undertook assessment studies of graduate programs in 1982 and 1993.^{44,45} Although considerable data were collected during the 1993 study, the result was a ranking of programs in 41 fields of study, based on reputational ratings provided by 50 reviewers chosen from the discipline. These rankings were based in large part on the raters' perceptions of the quality of the program's faculty. Retrospective analysis of factors influencing reputational ratings were published, but were not used in the ranking of programs.

The NRC is conducting another assessment of research-doctorate programs, and in response to the criticism of reliance on reputation in the 1993 process, it has significantly increased the use of metrics that will be collected via questionnaires administered to institutions, programs, faculty, students, and graduates of the program. It is of interest that this next round of doctorate-program assessments is going to examine the outcomes of graduate education, and the students, while the previous assessments focused primarily on the perceived reputation of the faculty. This expansion of data collection will better measure the culture of scholarship of a program, not just the scholarly productivity of the faculty. The survey questionnaires have been field-tested and a series of recommendations and the questionnaires have been published by The Committee to Examine the Methodology to Assess Research-Doctorate Programs.⁴⁶ Prior to deciding to conduct another national assessment program, a group of presidents of organizations representing institutions offering graduate degree programs developed a statement of purpose for the process of doctoral program assessment:

"The purpose of an assessment is to provide common data, collected under common definitions, which permit comparison among doctoral programs. Such comparisons assist funders and university administrators in program evaluation and are useful to students in graduate program selection. They also provide evidence to external constituencies that graduate programs value excellence and assist in efforts to assess it."

This statement of purpose is at odds with the view of FASEB's opposition to a national "accreditation"

process, and particularly with FASEB's view that each graduate program is unique, and diversity of programs is preferred over homogeneity. Uniqueness of a program would preclude its comparison with other programs, a major purpose of the NRC assessment process. In the upcoming assessment, pharmacology, toxicology, and medicinal/pharmaceutical chemistry programs will be included, but not pharmaceuticals or pharmaceutical sciences. Given the visibility of the NRC assessment program on university campuses, being excluded from the NRC national assessment program can work to the detriment of graduate programs in colleges/schools of pharmacy, particularly when other programs on campus are being assessed. In contemporary higher education, comparisons of programs among peer institutions is increasingly utilized in making funding decisions on university campuses.

Back to the Future with Graduate Program Evaluation. The 1979 Special Committee on Research and Graduate Education suggested that AACP conduct a special program or session on defining the characteristics of a "good" graduate program. The Lemberger Commission recommended that all graduate programs in the pharmaceutical sciences undergo periodic self-evaluations, and also recommended that AACP collect this evaluation data for comparison purposes. The Graduate Education Commission reiterated the recommendations of the Lemberger Commission on program evaluation and benchmark data collection by AACP. The question of what data are appropriate to collect has been solved in part, by the publication of the NRC survey instruments for the upcoming national evaluation of doctoral graduate programs. The NRC evaluation instruments can provide the pharmaceutical sciences a common data set to compare with pharmaceutical sciences programs across campuses and with other disciplinary programs undergoing the NRC evaluation on their own campus. Although it is not feasible to require AACP member institutions to participate in a process of graduate program evaluation, it should be in the best interest of programs to participate in order to have comparison data to assist them in improving their programs, and in defending their performance to appropriate university officials.

Recommendation 5: AACP should sponsor an institute on the topic of graduate program assessment and improvement, including post Pharm.D. education/training.

Suggestion 1: AACP member institutions should utilize the National Research Council's Assessment of Research-Doctorate Programs Surveys to collect data on their Ph.D. programs in the pharmaceutical sciences, and provide this data to AACP, which will

allow for benchmarking comparisons with selected peer programs.

COMMITTEE STRUCTURE AND GOVERNANCE

It became apparent during the committee's deliberations that many of the issues dealt with by the RGAC and other standing committees are so complex that they cannot be resolved during a single year. One AACP standing committee, Bylaws and Policy, appoints its members for three-year terms so that there is a carryover of expertise on this committee each year. Presently, the incoming AACP President, who appoints and charges the RGAC, chooses all new committee members and charges the committee to deliberate an issue or issues that are usually unrelated to those of the previous year.

This procedure of committee appointment and topic assignment has not always been the case. Beginning in 1979–80, the RGAC charges included consideration of the previous committee's recommendations and further actions, if needed, in addition to new charges. From 1979–80 until 1994–95, it was customary to reappoint RGAC members. There was no apparent succession to the committee chair, as committee chairs occasionally served following a year on the committee, or served as chair on initial appointment. During the 1980s, several RGAC members served 4–5 years in succession, occasionally with one year as chair.

An examination of standing committee reports over the past several decades provides a historical view of the evolution of pharmacy and pharmaceutical sciences education and research. One is impressed by the quality of the deliberations described in these committee reports, and the farsightedness of their suggestions, recommendations, and policy statements. Yet, these committee reports do not appear to have the impact on the deliberations of the academy in the next few years following their publication. Many of the issues dealt with in this report have been the topic of RGAC deliberations from the committee's inception in 1979. A process of graduate program evaluation in the pharmaceutical sciences, a topic of the first RGAC report, succeeding committees, the Lemberger and Graduate Education Commissions, and an AACP policy statement supporting program self-evaluation, has still not been implemented.

To address this disconnect between committee recommendations and AACP activities, the committee recommends a more structured appointment process to the RGAC and if appropriate, to the Academic Affairs and Professional Affairs Committees. Committee appointments would be for a three-year term. The incoming

President would make two new appointments each year with a six-person committee. The President would also appoint the chair from the current committee membership, and the President and appointed chair would mutually construct the agenda for the upcoming year.

In addition to the multiple-year appointments to the RGAC and other standing committees, the RGAC suggests that the BOD consider appointment of the standing committee past-chairs to the BOD for a one-year term, similar to the appointment of the Section Coordinating Committee Chair. Inasmuch as these individuals had been involved in addressing a topic of extreme importance to the academy in the previous year, they could provide the BOD assistance in its deliberations and actions revolving around the committee report's recommendations.

Recommendation 6: The AACP Bylaws should be amended to specify three-year terms of appointment on the association's standing committees. The AACP President should appoint the committee chair from one of the committee members who has already served at least one year. The minimum standing committee membership should be no fewer than six members, excluding liaison members, so that at least two new committee members are appointed each year.

Suggestion 2: The AACP BOD should consider amending the association Bylaws to expand the size of the board by a one-year ex-officio appointment of the three individuals serving as the chairs of the Academic Affairs, Professional Affairs, and Research and Graduate Affairs Committees, respectively, for the year following their chair appointment.

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Appendix 1. Metrics for evaluating faculty contributions to scholarship

The specific metrics under each major area are not listed in order of importance, nor would each one be applicable to every institution.

- Grants and other revenue-generating activities (per individual, department, or institution)
 - Direct grant dollars
 - Indirect cost recovery
 - Salary coverage from grants
 - Number of grants awarded
 - Number of grants submitted
 - Percentage of faculty members who are principle investigators
 - Direct grant dollars per net assigned square feet of research space
 - Indirect cost recovery from grants per net assigned sq ft of research space
- Publications (per individual, division/department, or institution)
 - Peer-reviewed original research articles
 - Non-peer reviewed articles
 - Abstracts
 - Book chapters/review articles
 - Books
- Reputation/National Service (per individual, division/department, or institution)
 - Editorship or membership on editorial boards
 - Membership on NIH/AHRQ Councils and study sections
 - Membership on and directorship of scientific advisory boards
 - Membership in elected societies
 - Leadership positions in national professional/scientific associations
 - Named and invited honorific lectureships
 - Peer-reviewed national presentations
 - National prizes and scientific awards
- Contributions to the General Research Mission of the College/School or University (per individual, division/department, or institution)
 - Member or chair of an institutional IRB
 - Member or chair of institutional IACUC
 - Member or chair of institutional safety committee
 - Member or chair of conflict-of-interest committee
 - Member or chair of scientific conduct committee
 - Member or chair of promotion and tenure committee

Appendix 2. Some indicators of the presence of an institutional culture of scholarship as viewed by different members of the academic community.

Faculty might include some of the following as indicators of a culture of scholarship:

- Sufficient start-up funding for a research program,
- Sufficient usable space for research/scholarship,
- Rewards for scholarly productivity, including financial, and recognition by the institution,
- Recognition of the value of inter- or multi-disciplinary research in promotion and tenure guidelines,
- Respect for their program of research, particularly if it is not laboratory-based,
- A supportive department or division environment, particularly from senior faculty,

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Bridge funding in the event a grant is not renewed or a new grant not funded on the first round,
Reasonable instructional, service, and clinical service responsibilities, so that time is available for scholarship activities,
Opportunity for a sabbatical or short leaves to improve research skills, and
Opportunity to serve on doctoral committees, both within and among departments.

Graduate students might include:

An environment of academic and research support from other graduate students and/or postdoctoral fellows,
Up-to-date facilities and equipment to perform needed experiments and data analysis,
Teaching or research assistantship support throughout the doctoral program,
Access and affordability of health care benefits for themselves and immediate family members,
Scheduled activities to facilitate interactions with other students, both graduate and professional,
Teaching experience beyond grading of papers or supervising laboratories,
Recognition of who they are by individuals other than those in their major professors laboratory or department,
Programs that expose them to career opportunities after completion of the degree program,
Financial support to attend scientific meetings and present research results, and
Timely feedback on research progress.

Postdoctoral fellows and residents, in addition to those for graduate students might include:

Sufficient financial support to live beyond the poverty level,
Access to benefits that minimize personal or family concerns while pursuing research or practice program, and
Opportunity to write grant proposals and articles and have them reviewed by postdoctoral study advisor(s) prior to leaving postdoctoral position.

Professional students might include:

Faculty who share their passion for research in their classes,
Faculty interested in their learning usable concepts not just regurgitating factual material on tests,
Accessibility to faculty, either electronic or face-to-face to assist with difficult concepts,
A variety of learning environments, not just lectures,
A variety of testing methodologies, not just multiple choice,
Opportunity to work with faculty and/or graduate students on research projects and recognition of this activity through course credits,
An instructional program where concepts "start to come together" and can be applied to solving real problems facing pharmacists, and
Faculty, who recognize they are instructing "pharmacy" students, and have some understanding of what pharmacist provide and should be providing patients.

Institutional indicators that a culture of scholarship exist might include:

Measurable scholarly productivity from faculty in all departments or divisions of the college, not just overwhelming domination by one department,
The instructional load not primarily carried by one segment of the faculty or by part-time faculty,
Institution-wide scholarship-related activities, such as a research seminar series that promotes interaction of faculty, graduate students, postdoctoral fellows, and residents,
Interdepartmental faculty research and/or interdisciplinary courses,
Research-productive faculty participate, even if to a limited degree, in instruction in the professional degree program, not just the graduate curriculum,
Faculty meetings or retreats openly address controversial topics such as promotion and tenure guidelines, expectations of non-tenured faculty for promotion, and assessment of teaching,
A structured mentoring program for new faculty members,
Promotion and/or tenure of faculty is viewed as a measure of institutional success,
Professional students are regularly made aware of faculty members' research interests and activities,
Faculty with active research programs have an opportunity to integrate their research topics, the goals of their research, and/or their approach to problem solving into to professional degree courses,
Professional degree students are involved in research activities with faculty or graduate students,
The primary function of the pharmacy curriculum is not knowledge transfer assessed by multiple choice examinations, and
Case studies, problem based learning, integrated laboratories, small group activities, essay exam questions, and writing assignments are common in the professional curriculum, despite the fact that they are time consuming for faculty.