American Journal of Pharmaceutical Education **2011; 75 (10) Article S12.**

AACP REPORTS

Report of the 2010-2011 Academic Affairs Standing Committee

Holly L. Mason, PhD,[a] Mitra Assemi, PharmD,[b] Bethanne Brown, PharmD,[c] Jeff J. Cain, EdD,[d] Wendy C. Cox, PharmD,[e] Stephen J. Cutler, PhD,[f] Vern K. Duba, MA,[g] Evan T. Robinson, PhD,[h] Cecilia M. Plaza, PharmD, PhD[i]

[a]College of Pharmacy, Purdue University, Chair
[b]School of Pharmacy, University of California, San Francisco
[c]James L. Winkle College of Pharmacy, University of Cincinnati
[d]College of Pharmacy, University of Kentucky
[e]Eshelman School of Pharmacy, University of North Carolina at Chapel Hill
[f]School of Pharmacy, The University of Mississippi
[g]College of Pharmacy, The University of Iowa
[h]College of Pharmacy, Western New England University
[i]American Association of Colleges of Pharmacy

According to the Bylaws of the American Association of Colleges of Pharmacy (AACP), the Academic Affairs Committee shall consider

> *". . .the intellectual, social, and personal aspects of pharmaceutical education. It is expected to identify practices, procedures, and guidelines that will aid faculties in developing students to their maximum potential. It will also be concerned with curriculum analysis, development, and evaluation beginning with the preprofessional level and extending through professional and graduate education. The Committee shall seek to identify issues and problems affecting the administrative and financial aspects of member institutions. The Academic Affairs Committee shall extend its attention beyond intra-institutional matters of colleges of pharmacy to include interdisciplinary concerns with the communities of higher education and especially with those elements concerned with health education."*

Consistent with a theme of exploring the way in which AACP might foster organizational improvement and success among its institutional members, President Rodney Carter charged the Committee to look at how the curriculum prepares graduates to function in the emerging "learning health care system" to be evidence-based, translational practice development leaders, including the effective use of information systems and tools (e.g., clinical decision support, Electronic Health Record/Personal Health Record, Medication Therapy Management systems); as well as the requisite attitudes and behaviors to build sustainable practices, either from existing practices or *de novo*. The Committee was also asked to consider the report of the 2008-09 Argus Commission and to suggest the areas needed for inclusion in pharmacy curricula for graduates to have the knowledge, skills and attitudes to facilitate practice advancement.[1]

The Committee members considered the following questions: Is there something in graduates that we want that we may (or may not) currently be preparing them for? What are the traits that give students the tools to build and sustain sustainable practice models regardless of specific site? Is the issue that perhaps nothing is missing from the curriculum but rather how we do or do not "connect the dots"? In discussing these questions the Committee chose to focus the charge on those traits that foster and support a student's ability to build and advance sustainable models, recognizing that the AACP Center for the Advancement of Pharmaceutical Education (CAPE) Educational Outcomes 2004 represents more skills/cognitive side of what we are doing in our curricula while the traits discussed move more into the affective domain.[2] These traits include self-efficacy, self-assessment, reflection, entrepreneurship, and leadership and advocacy. In examining those traits, the following considerations were put forth:

- Curriculum should be considered as it is most broadly defined inclusive of the didactic, experiential, co-curricular, and extra-curricular components. The Committee identified the need to provide students the opportunity to develop the traits above while still in a more protected environment in didactic, experiential, co-curricular, and extracurricular portions of the curriculum. In essence, asking - what is the "ingredient list" and what potential "recipes" should you use?
- The expanded view of curriculum allows faculty to look at curricular elements already being done but not further identified by trait (i.e., students are not being held explicitly accountable in that manner thus resulting in a "hidden" curriculum).

Identifying current curricular elements in this expanded view of the curriculum highlights existing opportunities without further contributing to curricular density.

The purpose of this report is 1) to define traits in the affective domain that provide students with the tools to build and advance sustainable practice models and that can be addressed in the broadly defined curriculum and 2) to provide examples from the literature on how they have been incorporated into curricula. This report is not intended to be an exhaustive literature review or environmental scan. Rather it is to provide examples of how these traits may already exist in the broadly defined curriculum and thus not further add to curricular density. To accomplish this, committee members worked within teams to complete a standard template related to each of the traits identified during the on-site Committee meeting. The template consisted of 3 core elements: 1) defining the trait based on the literature, 2) describing how the trait relates to pharmacy practice, and 3) providing an example or examples from the health sciences literature that demonstrated where each trait may already exist in the curriculum, improve an existing practice site, or is co-curricular or extra-curricular in nature. The Committee report follows the same structure to discuss each trait.

Trait: Self-Efficacy

Definition based on the literature. "Self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments".[3] In general, self-efficacy regulates 4 primary processes of human functioning: cognition, motivation, emotion, and selection. Cognitive processes are linked to self-efficacy because behavior is regulated by thought. Those with a high sense of self-efficacy visualize success scenarios, which can provide guides for performance. Second, self-efficacy affects motivation because people choose which challenges to undertake, how much effort to expend, and how long to persevere through obstacles. Third, self-efficacy beliefs affect emotions through the regulation of thought patterns. Those with high self-efficacy do not dwell on their own deficiencies nor conjure apprehension; rather they can manage unpleasant emotions by palliative means. Finally, self-efficacy influences selection of activities and environments. People undertake challenges they believe they can conquer and avoid activities they believe exceeds their coping capacity.[4]

How this trait relates to practice and examples. With regard to pharmacy practice, self-efficacy influences individual choices, goals, emotional reactions, effort, coping, and persistence as they pertain to professional activities. In other words, pharmacists may not undertake innovative, practice-changing endeavors without high efficacious beliefs. Even if they do, self-efficacy regulates how long and to what extent a person will persevere through obstacles and negative reinforcement.[5] Research of primary care clinicians revealed that self-efficacy moderated participants' ability to adopt and maintain new approaches to practice.[6]

Within pharmacy practice, self-efficacy theory has been applied to a variety of pharmacist activities. Specific examples of self-efficacy within pharmacy practice include, but are not limited to, pharmacist confidence in the provision of pharmaceutical care[7], smoking cessation education with respect to the pharmacist and the development of confidence within the practitioner to counsel patients effectively to enhance their ability to quit[8], and pharmacists involvement in over-the-counter product selection as linked to practitioner confidence to perform particular activities.[9]

Within pharmacy education there have been several publications regarding self-efficacy in various means. Plaza et al. found that self-efficacy was useful in evaluating curricular change and had potential benefits to experiential education.[10] Other examples of self-efficacy use or consideration within pharmacy education have included management course redesign[11], tobacco cessation course development[12], clinical nutrition course implementation[13], and its application within a goal-efficacy framework regarding pharmacy student success.[14] Within medical education self-efficacy has also been evaluated and one example is how higher self-efficacy correlated with better student performance on clinical simulations, in this case an OSCE. While confidence was not a direct correlate to performance, interestingly anxiety was negatively associated with self-efficacy and could be associated to a lack of confidence.[15]

Areas of commonality within the aforementioned literature was the role that subject knowledge played in terms of developing confidence in the learner and subsequently leading to the development of positive self-efficacy. In addition, common within the literature was the use of application-based activities such as discussions, cases, assignments, and simulations to provide the student with the opportunity to apply his or her knowledge and subsequently begin to develop confidence and self-efficacy. It is important for students to experience successes (even if small) in implementing change as successful efforts increase self-efficacy. This is significant on a number of levels. First, if individuals do not believe they can accomplish the desired goal with their efforts, then there is no incentive to act. Second, once an act is initiated, it is important for individuals to learn that despite setbacks and obstacles, they can persevere and eventually obtain success.

Practice programs that enhance educational strategies beyond traditional didactic instruction can improve self-efficacy. Applying this same model to traditional pharmacy populations could involve a similar educational design: didactic material presentation for foundation knowledge; modeled and applied activities including standardized patient assessment, OSCE or simulation; followed by a period of evaluation and reflection; and then application of the skill.

Implementation and utilization of self-efficacy theory should include due consideration to not dramatically exceed the student's knowledge base for the purposes of application, which could actually decrease self-efficacy by decreasing the student's confidence. The key to success is to create stretch without break scenarios that challenge the student to exceed what he or she knows and without decreasing confidence, and subsequently self-efficacy. It would be possible to apply this to the affective skills that define how to best practice pharmacy in a patient-centered manner. The examples cited, of which many more exist, represent ways in which self-efficacy has been linked to the provision of pharmacy care at the evaluation and synthesis levels of functioning as defined by Bloom. It is not enough to know; knowing must be translated into actions. Self-efficacy plays an important role in the other traits identified in the affective domain.

Trait: Self–Assessment

Definition based on the literature. Self-assessment in education is a process of formative assessment during which students reflect on the quality of their work or performance, judge the degree to which it reflects explicitly stated goals or criteria, and revise accordingly.[16] The purpose behind self-assessment is to boost learning and achievement and promote self-regulation, or the process of monitoring and managing one's own learning needs. Self-assessment therefore helps students take responsibility for their own learning.[17] As such, self-assessment is also a required ingredient for life-long learning and continuous professional development.

How this trait relates to practice and examples. Students must be aware of their own learning, knowledge, and skills in order to become self-directed learners. Self-assessment in an educational environment threatened by curricular density is a skill students need to foster to allow them to focus energy on what they don't know in order to improve overall learning. In turn, self-directed learning is integral to the life-long learning and continuous professional development processes which students will need to continue to engage in throughout their professional lives. Unfortunately, growing evidence suggests that many health care professionals lack effective self-assessment skills.[18] An example is the "above-average effect" or tendency of most individuals to believe they are above average despite statistical reasoning or probability.[18] The existence of professional disciplinary processes also supports that some individuals lack awareness of their own competence. Canadian studies suggest that 15%-30% of all practicing pharmacists do not meet current standards or expectations and are frequently unaware of this fact.[18]

Despite these data, little is known to date on how self-assessment skills actually develop and may be improved. Few studies from the health professional education literature describe self-assessment strategies and assessment. Self-assessment does need to be coupled with feedback in order to be effective.[19] Effective student self-assessment is a process requiring several steps: clear expectations of the task or performance; self-assessment; feedback, either obtained through self-evaluation or from peers, mentors, or faculty; and revision.[16]

Austin and colleagues used reflection-in-action and self-assessment to promote critical thinking among pharmacy students.[20] The intervention consisted of an innovative reflective exercise built into didactic learning environment with practical applications to didactic and experiential learning environments. Krause et al describe the use of peer and self-assessment into a pharmacy practice course in which students performed an overall assessment of themselves and their peers at midpoint and at semester end.[21] Assessments were conducted during class time. The results indicate that incorporation of this type of assessment provided an on-going monitoring mechanism for student development. In examining students' self-assessment of learning through service-learning, Kearney focuses on the use of self-assessment as a determinant of learning within a service-learning course in pharmacy.[22] The self-assessment tool was used at both the beginning of the course and at the end. Results indicate an increase in knowledge due to the service-learning course work. In the medical literature an analysis of peer, self, and tutor assessment in problem-based learning tutorials, reviewed student's ability to self and peer assess as compared to a tutor's assessment of the quality of work completed in a Problem Based Learning (PBL) course.[23] The results of the study concluded that students are unable to accurately judge the quality of their own work. This ability to self-assess is connected with self-efficacy. Students with high self-efficacy, those who awarded high marks for their work, had stronger tendency for self-regulation.

Trait: Reflection

Definition based on the literature. Definitions of reflection vary between describing the nature of the act itself to including the translation of the act into practice. The

roots of the word originate from Latin, meaning "to bend" or "to turn back."[24] Dewey defined reflection as "active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further conclusion to which it tends."[25] Thus an essential aspect of reflection involves self-understanding. More recently, Boud et al. define reflection as "a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to a new understanding and appreciation."[26] Reflection therefore also involves understanding situations in order to inform future action.

How this trait relates to practice and examples. The concept of the "reflective practitioner" was first introduced by Schön in 1983 to describe an individual who uses reflection as a tool to revisit experiences in order to learn from them and to frame problem-solving in the practice setting.[27] This act is a pre-requisite for problem solving to occur when unknown, unexpected, or unusual situations are encountered. The process of reflection itself has been summarized as a simple three stage model consisting of the following components: planning, doing, and reviewing.[24] The process can occur before, during or after an encounter. However, the level of reflection required for true learning requires a higher level of analysis, questioning and framing of experienced events (termed critical reflection).[28] In order for reflection to be purposeful, insights gained through the process must then be applied to future situations ultimately changing behavior. Reflection is an essential aspect of self-regulation and life-long learning.[24] Reflection is therefore integral to both developing and maintaining professional competence.

In an educational context, reflection involves a learner's active engagement in a mental process, where thoughts are "turned back" for interpretation and analysis.[24] While facilitative for "deeper" didactic learning, reflection is essential for experiential learning. In Kolb's experiential learning cycle, reflection is the second of 4 phases.[29] Reflecting allows learners to "think about thinking" before, during and after situations (e.g., where new knowledge has been introduced or new experiences have been encountered). Doing so allows students to digest experiences and develop a greater understanding of both self and situation such that future behaviors are informed by previous behaviors. Effective reflection has been described as a "triple loop" process, requiring time, effort, and an openness to question actions, underlying beliefs and values, and different perspectives.[28] This 3-pronged approach differs from one that simply seeks an alternative plan for future experiences (single loop) or identifies reasons for the outcome (double loop). In summary, reflective learning can improve professionalism and clinical reasoning, and reflective practice can contribute to continuous practice improvement and better management of patients.[28]

Examples from the health professionals educational literature abound from the effectiveness of reflection, to assessing reflective content, to "how to" articles. Mann provides a systematic review of reflection and reflective practice in health professions education.[30] A majority of the literature to date stems from medical education.[24,28,31-33] In pharmacy education examples include blogging for reflective journaling about course concepts using technology in a core communications class.[34] Another example is the use of reflection-in-action and self-assessment to promote critical thinking among pharmacy students where innovative reflective exercises are built into the didactic curriculum with practical applications to didactic and experiential learning environments.[20]

What should be noted is that reflection is not an intuitive skill and must be taught using best practices along with guided reflective activities and feedback. Much of the information available provides examples of best practices that can be used by faculty to teach and assess this skill without significantly impacting the curricular density of our programs. Reflective activities can be incorporated at all levels of our curriculum including didactic, experiential and extra-curricular. Incorporation of reflection into the curriculum, however, can impact resources, such as the availability of educational technology and faculty, preceptor, and student time. For example in the medical literature, Aronson provides 12 tips for teaching reflection at all levels of medical education, which can serve as a guide for faculty to the steps needed to include reflection within both the didactic and experiential curriculum.[28] Consideration must therefore be given to how reflection can be best incorporated into both didactic and experiential learning in order to facilitate achievement of curricular terminal outcomes in an individual academic environment given the resources available.

Trait: Entrepreneurship

Definition based on the literature. Entrepreneurship revolves around taking on the risks and responsibilities associated with implementing innovations. The Commission to Implement Change in Pharmaceutical Education identified critical thinking and problem solving as key outcomes for pharmacy graduates.[35] The 2009-2010 AACP Academic Affairs Committee examined in some depth the extent to which these outcomes are addressed in schools and colleges of pharmacy and how they prepare students to be innovators and effective practitioners.[36] Critical thinking and problem-solving should be considered foundational components of entrepreneurship, but do not fully define the term. In order to engage in entrepreneurship an individual

needs to have a skill set of inter-related competencies that include critical thinking and problem solving. Rubino and Freshman conducted an extensive search of the literature and concluded that entrepreneurship can be viewed as a set of eight competency clusters.[37] These clusters consist of decision making, strategic thinking, risk taking, confidence building, communicating ideas, motivating team members, tolerance of ambiguity and internal locus of control. The development of these eight competency clusters in students and pharmacy practitioners may be seen as defining and entrepreneurship-capable individual.

How this trait relates to practice and examples. In order to facilitate the development of pharmacy students as future leaders in the profession it is important to offer educational growth in skills such as decision making, strategic thinking and risk taking skills that comprise entrepreneurship. By fostering the development of these skills the quality of pharmacy graduates in the US will be greatly enhanced. Studies suggest that improving these proficiencies in students will equip them with stronger competency in offering better health care support as well as providing new solutions to current challenges facing health care, in general. As suggested by Eddy and Stellefson, these skills will allow practitioners the "skill-set" to facilitate creative, new health education and health promotion business ideas such as stronger skills to design, implement, and evaluate health disease treatment and/or prevention.[38] By combining the principles of entrepreneurship with those of leadership, pharmacists can create value in emerging, innovative pharmacy-based services.[39]

Opportunities for the application of these entrepreneurial activities in direct patient care include, but are not limited to, renal transplant patients, addiction treatment, diabetes, hypertension, anticoagulation clinics, and basic medical screenings (e.g., blood pressure, cholesterol). There are additional new patient care roles that are evolving and will evolve in the future such as activities related to biotechnology and other areas of specialized therapy consultation. Beyond direct patient care applications the acquisition of entrepreneurial competencies provides a foundation for practitioners to develop new practice models for delivering patient-centered care that are financially self-sustaining. Examples include alternative collaborative practices, and information technology-based opportunities related to e-prescribing or telepharmacy. Although some of the necessary traits or competencies are presented to students as part of their education, more often than not this is insufficient, leaving most pharmacists to learn these skills post-graduation. Lack of confidence by the practitioner may lead to apprehensions in entering health fields that need improved development. Take, for example, the field of renal transplant therapy, in which the influence of a pharmacist can have a profound impact on the disease. Pharmacists working in this area of care must not only mange the treatment of the patient but also be concerned with ensuring that the patient adheres to the medications, and that the therapeutic response is optimal. On the other hand, a pharmacist operating a methadone clinic needs to be able to manage the business, ensure prospering dosing of the patient, make psychological counseling available, and ensure the facility is meeting federal and state laws.

The quality of health care provided can be correlated to the entrepreneurial skills of the practitioner. These skills should not be limited to management and leadership of employees but include the ability to change the current health care paradigms and address the challenges in improving the quality of health care in the US. There should be little doubt that learning basic entrepreneurial skills will enable health care practitioners to offer better services for disease prevention and/or treatment. A variety of individuals have explored the relationship between the development of specific entrepreneurial skills and clinical outcomes[40] or business related outcomes[41-42] in pharmacists, although a significant amount of work needs to be done to fully analyze the variety of competencies that define entrepreneurship.

There are a number of pharmacy schools and colleges that have courses or experiential rotations that, in part, focus on encouraging the development of entrepreneurial skills in students. The National Community Pharmacists Association (NCPA) has surveyed colleges and schools of pharmacy to document these activities.[43] However, these courses and experiences do not have a uniform approach to addressing the topic. There are textbooks and textbook chapters that provide students a good introduction to entrepreneurship[44], even some that are pharmacy-specific[45]. Hermansen-Kobulnicky and Moss have developed a pharmacy-specific instrument to measure students' proclivity toward becoming entrepreneurs in their practice subsequent to graduation, with the idea that efforts could be made to encourage and support identified students during and following their educational program.[46] Rubino and Freshman constructed a more general instrument to measure entrepreneurial tendencies.[37] They have applied this instrument as part of an entrepreneurial training program in the health administration undergraduate classroom. In their paper they discuss how a variety of group assignments, experiential exercises and classroom sessions target each of the 8 previously identified entrepreneurial competency clusters.

A co-curricular activity engaged in by a significant number of pharmacy schools is the Good Neighbor Pharmacy NCPA Pruitt-Schutte Student Business Plan

Competition. This competition involves teams of up to four students who are advised by a pharmacy faculty member in preparing a pharmacy business plan. The competition is intended to facilitate the development of skills involved in the planning process and ultimately result in more pharmacy entrepreneurs.[47]

Traits: Leadership and Advocacy

Definition based on the literature. Leadership and advocacy have been discussed extensively in recent AACP Argus Commission Reports[1,48] and in the pharmacy literature.[49-63] The definition of leadership and advocacy is best framed by reviewing the professional pledges within the "Oath of a Pharmacist." Each year hundreds of new students take the vow voluntarily with their own perception of leadership and advocacy and the definition varies from individual to individual based on personal experience and expectation. The 2008-09 Argus Commission distinguished between White's "Big L" and "little l" leaders.[48] Through a tiered model for pharmacy education, "little l" leaders encounter the opportunity for advocacy.

How this trait relates to practice and examples. Important components of leadership and advocacy include willingness to embrace change and the realization of what can make a difference. Self-efficacy plays a role in both leadership and advocacy. In terms of embracing change, "Curricula and co-curricular activities must also prepare our graduates to be leaders of change, despite the fact that they will be the junior members of the health care team as they graduate. It is critical that they understand the concepts of grass roots (or non-positional) leadership and have the ability to work within their immediate environments to initiate and sustain health care improvements."[1] For the realization of what can make a difference, "Students must also recognize the need for personal accountability, particularly with respect to making a commitment to excellence and making a difference. Without an underlying belief in what they can accomplish as an individual and the need to make a personal commitment to embody the change that they hope to see in the profession, it is unlikely that leadership development activities will result in notable change in the individual's activities or behaviors."[54] Examples of elective courses on leadership: At the University of Minnesota College of Pharmacy a Leading Change in Pharmacy elective course has been developed.[59] This two semester course has three primary goals: "developing an awareness and understanding of leadership, assisting participants in delineating a process of leading changes and the leader's role in managing this process, and encouraging students to practice core leadership skills"[59] Another example is a student leadership retreat at the University of Minnesota College of Pharmacy. "Activities were designed to help students recognize that they have a unique set of abilities and motivations that can be used to advance pharmacy practice after graduation or even while they are still students."[54] The encouragement of student participation in leadership development activities through pharmacy student organizations is another way to promote this affective domain through the extra-curricular portion of the broadly defined curriculum. Another extracurricular or co-curricular opportunity is the Academy of Student Pharmacists (ASP) and Academy of Managed Care Pharmacy (AMCP) sponsored legislative days in various states.

RECOMMENDATIONS

1. AACP should convene a CAPE-like taskforce/panel to develop outcomes related to traits in the affective domain such as self-efficacy, self-assessment, reflection, entrepreneurship, leadership and advocacy.
2. Once the CAPE-like taskforce/panel completes its work, AACP should convene an expert panel to develop a curricular mapping template as well as other assessment tools to assess the traits. Additionally a plan for disseminating and sharing what colleges/schools are doing with these traits should be devised in collaboration with AACP.

SUGGESTIONS

1. Colleges and schools of pharmacy are encouraged to partner with a broad range of other entities (e.g., other local, state, and national associations, preceptors, practice sites) in the creation of diverse practice sites that encourage the development of the affective domain skill set and that enhance and build sustainable practice models.
2. Colleges and schools of pharmacy are encouraged to place students in sites or opportunities within the curriculum, broadly defined, where they will be exposed to and experience modeling of these traits.
3. Colleges and schools of pharmacy are encouraged to have end point statements for each course that address "As a pharmacist you will. . ." to help create situational awareness to better connect learning experiences overall.

REFERENCES

1. Wells BG, Beck DE, Draugalis JR, et al. Report of the 2007-2008 Argus Commission: what future awaits beyond pharmaceutical care? *Am J Pharm Educ*. 2008;72:Article S8.

2. American Association of Colleges of Pharmacy. *Educational Outcomes 2004*. Alexandria VA: Center for the Advancement of Pharmaceutical Education Outcomes; 2004. Available at: www.aacp.org.
3. Bandura, A. Self-efficacy mechanism in human agency. *Am Psychol*. 1982;37:122-147.
4. Weiner IB, Craighead WE. *The Corsini Encylopedia of Psychology*. 4th ed. Hoboken, NJ: John Wiley & Sons; 2010:1534-1535.
5. Gist ME, Mitchell TR. Self-efficacy: A theoretical analysis of its determinants and malleability. *Acad Manage Rev*. 1992;17:183-211.
6. Sargeant J, Valli M, Ferrier S, MacLeod H. Lifestyle counseling in primary care: Opportunities and challenges for changing practice. *Med Teach*. 2008;30:185-191.
7. Farris, KB, Schopflocher, DP. Between intention and behavior: An application of community pharmacists' assessment of pharmaceutical care. *Soc Sci Med*. 1999;49:55-66.
8. Martin, BA, Brushiewitz, RH, Chewning, BA. Effect of a tobacco cessation continuing professional education program on pharmacists' confidence, skills, and practice-change behaviors. *J Am Pharm Assoc*. 2010;50(1):9-16.
9. Taylor, JG, Berger, BA, Anderson-Harper, HM, Pearson, RE. Pharmacist readiness for greater involvement in OTC product selection: Implications for education. *Am J Pharm Educ*. 2001;64:133-140.
10. Plaza, CM, Draugalis, JR, Retterer, J, Herrier, RN, Curricular evaluation using self-efficacy measurements. *Am J Pharm Educ*. 2002;66:51-54.
11. Latif, DA. A management skills course for pharmacy students. *Am J Pharm Educ*. 2004;68(1):Article 3.
12. Schmelz, AN, Nixon, B, McDaniel, A, Suchanek-Hudmon, K, Zillich, AJ. Evaluation of an online tobacco cessation course for health professions students. *Am J Pharm Educ*. 2010;74(2):Article 36.
13. Chang, L, Popovich, NG, Iramaneerat, C, Smith, EV, Lutfiyya, MN. A clinical nutrition course to improve students' skills and confidence in counseling patients, *Am J Pharm Educ*. 2008;73(3): Article 66.
14. Carroll, CA, Garavalia, LS. Factors contributing to the academic achievement of pharmacy students: Use of the goal-efficacy framework. *Am J Pharm Educ*. 2001;68(4):Article 88.
15. Mavis, B. Self-efficacy and OSCE performance among second year medical students. *Adv Health Sci Educ Theory Pract*. 2001;6: 93-102.
16. Andreade H, Valtcheva A. Promoting learning and achievement through self-assessment. *Theory into Practice*. 2009;48:12-19.
17. Walser T. An action research study of student self-assessment in higher education. *Innov High Educ* 2009;24:299-306.
18. Austin Z, Gregory PAM, Galli M. "I just don't know what I'm supposed to know": Evaluating self-aqssessment skills of international pharmacy graduates in Canada. *Res Social Ad Pharm* 2008;4:115-24.
19. Fjortoft N. Self-assessment in pharmacy education. *Am J Pharm Educ*. 2006;70(3):Article 64.
20. Austin Z, Gregory PAM, Chiu S. Use of reflection-in-action and self-assessment to promote critical thinking among pharmacy students. *Am J Pharm Educ*. 2008;72:Article 48.
21. Krause J, Popovich N. A group interaction peer/self assessment process in a pharmacy practice course. *Am J Pharm Educ*. 1996;60: 136-145.
22. Kearney K. Students' self-assessment of learning through service-learning. *Am J Pharm Educ*. 2004;68(1):Article 29.
23. Papinczak T, Young L, Groves M, Haynes M. An analysis of peer, self, and tutor assessment in problem-based learning tutorials. *Med Teach*. 2007;29:e122-e132.
24. Sandars J. The use of reflection in medical education: AMEE Guide No.44. *Med Teach*. 2009;31:685-95.
25. Dewey J. *How we think*, revised edition. Boston: D.C. Health; 1933.
26. Boud D, Keogh R, Walker D. *Reflection: Turing experience into learning*. London: Kogan Page; 1985.
27. Schön D. *The reflective practitioner*. San Francisco: Jossey-Bass; 1983.
28. Aronson L. Twelve tips for teaching reflection at all levels of medical education. *Med Teach*. 2010:1-6.
29. Kolb DA. *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice Hill; 1984.
30. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. *Adv in Health Sci Educ Theory Pract*. 2009;14:595-621.
31. Thompson BM, Teal CR, Rogers JC, Paterniti DA, Haidet P. Ideas, activities, dissonance, and processing: A conceptual model to guide educators' efforts to stimulate student reflection. *Acad Med*. 2010;85(50):902-8.
32. Howe A, Barrett A, Leinster S. How medical students demonstrate their professionalism when reflecting on experience. *Med Educ*. 2009;43:942-51.
33. Wald H, Davis S, Reis S, et al. Reflecting on Reflections: Enhancement of medical education curriculum with structure field notes and guided feedback. *Acad Med*. 2009;84(7):830-837.
34. Bouldin A, Holmes E, Fortenberry M. "Blogging" abut course concepts: using technology for reflective journaling in a communications class. *Am J Pharm Educ*. 2006;70(4):Article 84.
35. Commission to Implement Change in Pharmaceutical Education. Background Paper II – entry level curricular outcomes, curricular content and educational process. *Am J Pharm Educ*.1993;57:377-85.
36. Oderda, GM, Zavod RM, Carter JT, et al. An environmental scan on the status of critical thinking and problem solving skills in colleges/schools of pharmacy: report of the 2009-2010 academic affairs standing committee. *Am J Pharm Educ*. 2010;74(10):Article S6.
37. Rubino, L, Freshman, B. Developing entrepreneurial competencies in the healthcare management undergraduate classroom. *J Health Adm Educ*. 2005;22:399-416.
38. Eddy JM, Stellefson, ML. Entrepreneurship in health education and health promotion: Five cardinal rules. *Health Promot Pract*. 2009;10(3):333-341.
39. Tice BP. Advancing pharmacy through entrepreneurial leadership. *J Am Pharm Assoc*. 2005;45(5):546-553.
40. Modrezejewski, KA, Provest, GP. Pharmacists' involvement with vaccinations leads to preventive health care role. *Am J Health Syst Pharm*. 2003;60:1724-1728.
41. Inegbenebor AU. Pharmacists as entrepreneurs or employees: The role of locus of control. *Trop J Pharm Res*. 2007;6(3):747-754.
42. Hindle, K, Gutting, N. Can applied entrepreneurship education enhance job satisfaction and financial performance? An empirical investigation in the Australian pharmacy profession. *Journal of Small Business Management*. 2002:40(2):162-167.
43. National Community Pharmacists Association. A survey of entrepreneurial courses offered at U.S. colleges of pharmacy. June 2003. Available at: http://www.ncpanet.org/email/entrepreneurship.html. Accessed December 8, 2010.
44. Druker, PF. *Innovation and entrepreneurship: Practice and principles*. Harper and Row. New York, New York. 1985.
45. Skrepnek, GH, Fishmain. Innovation and entrepreneurship, In: Chisholm-Burns MA, Vaillancourt AM, Shepherd M. eds., *Pharmacy*

management, leadership, marketing and finance. Sudbury, MA: Jones and Bartlett Publishers; 2011.
46. Hermansen-Kobulnicky, CJ, Moss, CL. Pharmacy student entrepreneurial orientation: A measure to identify potential pharmacist entrepreneurs. *Am J Pharm Educ*. 2004;68(5):Article 113.
47. National Community Pharmacists Association. Good neighbor pharmacy NCPA Pruitt-Schutte Student Business Plan. *www.ncpanet.org/index.php/students/business-plan-competition*. Accessed December 8, 2010.
48. Kerr RA, Beck DE, Doss J, et al. Building a sustainable system of leadership development for pharmacy: report of the 2008-209 Argus Commission. *Am J Pharm Educ*. 2009;73(8):Article S5.
49. Boyle CJ. Advocacy: The essential competence. *J Am Pharm Assoc*. 2009;49:364,366.
50. Boyle CJ. Fostering leadership and professionalism. *Am J Health Syst Pharm*. 2006;63:210,212.
51. Boyle CJ, Beardsley RS, Holdford DA, American PA. *Leadership and Advocacy for Pharmacy*. Washington, DC: American Pharmacists Association; 2007.
52. Brazeau GA. Leadership and learning. *Am J Pharm Educ*. 2008; 72:56.
53. Janke KK, Sorensen TD, Traynor AP. Instruction for student pharmacists on leading change. *Am J Pharm Educ*. 2009;73(2): Article 30.
54. Janke KK, Traynor AP, Sorensen TD. Student leadership retreat focusing on a commitment to excellence. *Am J Pharm Educ*. 2009; 73(3):Article 48.
55. Lang WG, IV. Strength-based advocacy: Making a difference through teaching, research, and service. *Am J Pharm Educ*. 2006; 70:63.
56. Louie C, Mertz E, Penfil B, O'Neil E. A pharmacy leadership action study. *J Am Pharm Assoc*. 2009;49:98-104.
57. Miller WA. Creating change in your profession. *Pharmacotherapy*. 2007;27:171-174.
58. Neigh JJ. 2010 prescott lecture. developing future pharmacy leaders. *J Am Pharm Assoc*. 2010;50:468-470.
59. Sorensen TD, Traynor AP, Janke KK. A pharmacy course on leadership and leading change. *Am J Pharm Educ*. 2009;73:23.
60. Thielke TS. Synergistic relationship between pharmacy leadership development and pharmacy service innovation. *Am J Health Syst Pharm*. 2010;67:815-820.
61. Tran K, Fjortoft N, Glosner S, Sundberg A. The student leadership institute. *Am J Health Syst Pharm*. 2005;62:1442.
62. Traynor AP, Janke KK, Sorensen TD. Using personal strengths with intention in pharmacy: Implications for pharmacists, managers, and leaders. *Ann Pharmacother*. 2010;44:367-376.
63. Zellmer WA. Pharmacy vision and leadership: Revisiting the fundamentals. *Pharmacotherapy*. 2008;28:1437-1442.