Healthy Assessment:
What pharmacy schools can teach us about effective assessment of student learning
--Douglas J. Eder, Ph.D. & Katherine A. Kelley, Ph.D.

ABSTRACT
Four lessons are evident in the interviews:
1. Pharmacy schools make their standards & expectations visible to themselves and to their students.
2. Students receive regular, relevant feedback.
3. The faculty performs regular, intentional curricular adjustments.
4. “We do this for our students.”

METHODS
Information was obtained through interviews of knowledgeable people at each school or program. Contributions came via---
• Interviews at 28 pharmacy schools nationwide, large-small, public-private, various points of entry, accelerated 3-year, upgrade to PharmD
• Responses to 7 open-ended questions
• Multiple responses permitted
• Analysis by simple content analysis of the open-ended responses

Participants:
University of Arkansas for Medical Sciences  Purdue University
University of California, San Francisco  Wingate University
University of Charleston (WV)  Texas A&M University
University of New England  University of Colorado
University of Washington  University of Oklahoma
University of Tennessee  University of the Pacific
University of Mississippi  St. John Fisher College
University of Wisconsin  Northeastern University
University of Pittsburgh  University of Connecticut
Florida A&M University  University of New Mexico
Duquesnes University  University of North Carolina
University of Georgia  St. Louis College of Pharmacy
Campbell University  University of Southern California
Rutgers University  Southern Illinois University Edwardsville
The seven open-ended questions:

1. For whom do you assess --- and why? In other words, why are you going through these assessment efforts?
2. What do you assess? (e.g., content, critical thinking, clinical judgment, writing, speaking....)
3. How do you manage the information and data flow? Do you use software to assist? Graduate assistants? Faculty assessment scholars? Something else?
5. What feedback on the findings is received by professors and the program? What do they do with it?
6. What feedback on the findings is received by students in the program? How do they get to it? What responses are expected from them as a consequence?
7. Especially in the arts and sciences (but not limited to those disciplines), students graduate by passing exams or projects of some sort with grades of, say, "78%" or "89%". In flying an airplane or building a college residence hall, landing an airplane safely 78% of the time or making masonry walls of the residence hall 89% vertical is NOT acceptable. Educating and training for near-perfection is often called "mastery level learning." My final question of the interview asks, "Do you teach for mastery?" If so, how is this assessed?

PRIMARY FINDINGS

1. For whom do you do assessment? Why?
   • For our students to assure they are doing well = 86%
   • For our accreditor(s) = 75%
   • For ourselves, our faculty, our preceptors to assure that we are teaching well = 68%
   • For our program, our curriculum = 68%
   • For the university and its alumni = 54%
   • For our patients, public/community = 36%

Comment: When this question was asked in other disciplines, such as arts & sciences and business, the "for-the-accreditor" element acquired the most responses. Of those that said "for-the-students," that response was mentioned first >75% of the time.

Conclusion: Part of the success of pharmacy schools with assessment is that they do it mostly for the reasons originally intended, that is, to improve student learning.
2. What do you assess?

- Self-generated list informed by externals (ACPE Appendix 2 or AAC&U or state list) = 79%
- Followed CAPE outcomes guidelines = 21%

Most common separately mentioned:
- Critical thinking/clinical judgment = 50%
- Content = 46%
- Professionalism = 36%
- Writing = 32%
- Speaking = 29%
- Problem solving = 25%

Comment: Pharmacy schools emphasized that they assess what matters to them, not just what is expected by outside groups. Therefore, assessment is an important part of pedagogy.

3. How do you manage the information/data?

- We do the majority by hand, we collect it ourselves, we use our own Excel spreadsheets, we analyze by committee = 68%
- ExamSoft = 39%
- E-survey platform (e.g., Qualtrics, AACP) = 39%
- University home-grown software system = 36%
- E*Value = 25%
- RXoutcome = 18%
- We’re developing toward software = 18%
- ...

Comment: There seems to be opportunity for technological assistance for managing assessment information.

4. What kinds of assessment artifacts do you collect?

- Everything on the list = 43%, meaning exams, portfolios, simulations, “standardized” patients, direct observations of IPPE & APPE, surveys

Most commonly mentioned separately:
- Student portfolios = 57%
- Exams = 54%
- Direct observations of IPPE/APPE = 54%
- Practice patient interactions (often videorecorded) = 46%

Others mentioned <25%, but contributing:
- Care plans, “assessment week” results, reflections, lab practicals, key skill (“gateway”) exams, simulations, surveys, capstones, research presentations….
5. How does feedback on student learning get back to the **faculty/program** so it can improve?
   - Committee (exec comm, curriculum comm, assessment comm, course coordinators, usually with students) = 82%
   - E-platform that is available 24/7 = 43%
   - Whole faculty meeting = 43%
   - Reports from one person or office, such as chairperson, dean, assessment coordinator = 36%
   - ….  

   *How often does assessment information get fed back to program/faculty?*
   - Committees meet primarily every month to discuss curriculum/pedagogy/assessment
   - Whole faculty meets primarily 1ce or 2ce per semester

6. How does feedback on student learning get back to the **students themselves so they can improve**?
   - Preceptor (often with rubric) = 75%
   - Student access to e-platform 24/7 = 39%
   - Grades (frequently with item analysis) = 36%
   - Skills inventory and direct observation (part of lab or patient interaction (real or simulated)) = 36%
   - Interaction with faculty = 29%

   *Comments: Students often have direct access to [technologically assisted] feedback that is independent of faculty activity. They are expected to make use of it. This expectation and this use of assessment differs from what typically takes place in, say, arts and sciences programs. Nevertheless, “We need a better system,” “We really don’t know how much or how often students, faculty members or preceptors interact [with system],” “We are developing.”*

7. Regardless of student grades, how do you use assessment to assure competence when students graduate and leave?
   *A combination of (varies with institution):*
   - P4 assessment involving preceptor = 68%
   - Challenge exams or touchstone questions involving knowledge and skills = 61%
   - End-of-year gateway assessments, including capstones = 57%
   - NAPLEX board exam = 32%
   - Authentic assessments incl. OSCEs or OSCE-like encounters and simulations = 18%
   - End-of-year committee evaluation of performance, with software tracking = 11%
   - GPA = 11%
   - ….  

   *Comment: Programs discussed "competence" vs. "proficiency" vs. "mastery." This discipline is a practice, with competence and entry-level professional proficiency expected as students graduate.*
INTERPRETATION
1. Use of assessment to improve student learning in pharmacy is obvious (86%), but not as prominent as in (more altruistic?) nursing (100%). Influence of accreditor (75%) is significantly more visible than in nursing (58%).
2. Pharmacy faculties tend to agree on what is important in the curriculum. Assessment tends to align with these priorities. There is a connection between what is assessed and what accreditors expect.
3. Assessment in pharmacy has more variety than in nursing and in most other disciplines because (a) more sources of information exist and (b) a major source (preceptors) is external to the university, and (c) pharmacy is a doctoral rather than a purely undergraduate program.
4. Feedback to students (with opportunity to remediate) and to faculty members (with opportunity to do curricular check-ups) appears less in pharmacy than in nursing, although both are higher than in most disciplines of arts and sciences. Even so, 29% responded that feedback “…Could be more robust, “Not everyone pays attention to the data,” “This is a problem for us,” and “We’re building something better.”
5. Pharmacy (68%) and nursing (60%) both process a lot of data by hand with commentary that computer platforms make data handling and feedback to students quicker and easier.

AAHE Nine Principles of Assessment Practice, 1992

<table>
<thead>
<tr>
<th>Principle</th>
<th>Q #</th>
<th>Collected nursing interviews</th>
<th>Collected pharmacy interviews</th>
<th>Your institution?</th>
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<tbody>
<tr>
<td>1. Begins with educational values</td>
<td>1,7</td>
<td>X</td>
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<td>2. Integrated performance over time</td>
<td>4</td>
<td>X</td>
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<td>3. Explicit programmatic purposes</td>
<td>2,7</td>
<td>X</td>
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<td>4. Outcomes, processes too</td>
<td>2,4,7</td>
<td>X</td>
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<tr>
<td>5. Ongoing, not episodic</td>
<td>4,7</td>
<td>X</td>
<td>X</td>
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<tr>
<td>6. Involve broad educational community</td>
<td>5</td>
<td>X</td>
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<td>7. Care about the questions</td>
<td>1,2,5</td>
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<td>8. Connected to change</td>
<td>3,5,6</td>
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<td>9. Addresses multiple audiences</td>
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PRINCIPLES OF GOOD PRACTICE FOR ASSESSING STUDENT LEARNING

1. The assessment of student learning begins with educational values. Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve. Educational values should drive not only what we choose to assess but also how we do so. Where questions about educational mission and values are skipped over, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.

2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time. Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore firmer bases for improving our students’ educational experience.

3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes. Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations—these derived from the institution’s mission, from faculty intentions in program and course design, and from knowledge of students’ own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.

4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes. Information about outcomes is of high importance; where students “end up” matters greatly. But to improve outcomes, we need to know about student experience along the way—about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.

5. Assessment works best when it is ongoing, not episodic. Assessment is a process whose power is cumulative. Though isolated, “one-shot” assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the progress of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.

6. Assessment fosters wider improvement when representatives from across the educational community are involved. Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians, administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus, understood, assessment is not a task for small
groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. **Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.** Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.

8. **Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.** Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and worked at. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.

9. **Through assessment, educators meet responsibilities to students and to the public.** There is compelling public stake in education. As educators, we have a responsibility to the publics that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation-to ourselves, our students, and society-is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

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This document was developed under the auspices of the AAHE Assessment Forum, 1992.