A GUIDE FOR DOCTOR OF PHARMACY PROGRAM ASSESSMENT
AACP
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I. Introduction and Purpose

B. Introduction

Assessment activities in higher education are expanding from global institution-wide activities to include specific academic and student service program assessment as a means of improving programs. The assessment movement gained national impetus in the mid 1980s and has continued to expand due to the efforts of assessment experts, institutional and discipline accrediting agencies, professional associations, resource providers, and interested faculty and administrators. The American Association of Colleges of Pharmacy (AACP) has provided leadership and guidance for program assessment and student assessment in pharmacy education through the AACP CAPE Educational Outcomes document,[1] CAPE Handbook on Outcomes Assessment (1995),[2] Background Papers from the Commission to Implement Change in Pharmaceutical Education (1990-1992),[3] and numerous presentations at AACP Annual Meetings and the AACP Institute. The American Council on Pharmaceutical Education (ACPE) has also provided leadership and guidance for program assessment through the ACPE Accreditation Standards and Guidelines.[4-7] Colleges and schools of pharmacy have developed or are developing Pharm.D. program assessment plans and specific assessment methods. A guide and list of resources and examples of assessment plans, methods and tools would be useful to enhance program assessment at colleges and schools of pharmacy.

C. Purpose

The major purpose of this Guide (and its Appendices) is to provide colleges and schools of pharmacy with guidelines, templates and other resources that are fundamental in the development, implementation and integration of a prospective, ongoing assessment plan for Doctor of Pharmacy academic programs, related student services and student life.

The second purpose of this document is to provide an expanding group of specific examples of program assessment instruments that may be of use to colleges and schools of pharmacy.

Thirdly, although these guidelines are directed towards Doctor of Pharmacy programs, they are also intended to provide a framework for the development of educational assessment plans that will meet the needs of institution-wide and/or other academic program-specific assessment.

Finally, this document is intended to reflect current fundamental practices in addition to providing examples of best practices. Therefore, this document will be updated on a regular basis. Recommendations, suggestions, additions, and comments for revisions should be sent to Eric Boyce (e.boyce@usip.edu) or Susan Meyer (smeyer@aacp.org).
II. Overview

Ongoing assessment of students and of academic programs is an integral component in the delivery of higher education. Institution-wide and program-specific assessments provide data that are used to improve the quality of courses, curricula, student services, and extra-curricular activities. Accrediting agencies for institutions and for specific disciplines have promoted or mandated the development and utilization of program assessment plans. Assessment plans are components of essentially all colleges and universities in the U.S.A. At colleges of pharmacy, program assessment activities were formalized in 38%, informal in 28% and in the planning stage in 34% of the 68 colleges responding to a survey in January 2000.

A number of resources are available to assist colleges and schools of pharmacy in developing, implementing and maintaining a program assessment plan. Those resources provide the general assumptions and principles of assessment, plus examples of assessment methods. Assessment activities differ from evaluation activities: assessment is used for improvement purposes and evaluation is used to determine a grade or make a final decision. Institutional and program assessment are used to assess an entire process and group of students – they are not an evaluation of an individual student, faculty member, staff, administrator, course, or service.

Assessment plans should be designed to collect and utilize meaningful information for continuous improvement in the educational process. Therefore, academic institutions, divisions, and departments need to develop, implement, revise, and maintain an effective and efficient plan to assess student achievement and activities both within and outside the curriculum and then to communicate and utilize meaningful data. Individual student assessment data are used to assist students in improving, but those data can be aggregated and serve as a logical, necessary part of program-assessment data.

An assessment plan must meet the needs and structure of that institution, academic division, and faculty. A small group of individuals are generally given the responsibility and authority to develop, implement and maintain an assessment plan. However, the success of a program assessment plan is dependent on the commitment, knowledge and contributions of essentially all faculty, staff, students, alumni, administrators, and leaders of the department, school, college, faculty governance, and university. When initiating an assessment plan, it is best to start with a few, carefully selective methods of assessment and then gradually expand assessment activities. Effective communication of assessment plans, activities and data is essential.

Assessment data need to be collected, stored, disseminated, analyzed and used for program improvement. In determining which items to assess, assessment groups should first look at the missions, goals, and expected outcomes of the academic program and the assessment plan(s) and determine the most important, useful outcomes. The 2000 Standards for Doctor of Pharmacy Programs from the American Council on Pharmaceutical Education [4-7], the CAPE Educational Outcomes from the American Association of Colleges of Pharmacy [1], and the NAPLEX and MJPE Competency Statements from the National Associations of Boards of Pharmacy [8] are also important sources of specific areas to assess. Additional sources of assessment targets include pharmacy practice acts; standards of practice from pharmacy organizations; and statements from employers, health care agencies, and higher education organizations. Ideally, assessments should target both general and discipline-specific abilities utilizing formative and summative, demographic and analytic, qualitative and quantitative, direct and indirect, and cross-sectional and longitudinal methods and data. A variety of assessment techniques should be used to collect data. Effective methods include examinations, surveys, interviews, observations, self-assessment, portfolios, embedded assessments, and high stakes evaluations. These techniques may be part of the educational and individual student evaluation processes, or may be separate, stand-alone entities. Careful consideration should be given to how data are disseminated, analyzed and utilized.

Finally, the assessment plan for the academic program should also be assessed and revised routinely. Important areas of this assessment include the general design of the plan; appropriateness of effort and resources; acceptance of and participation in assessment activities; appropriateness and utility of specific techniques; and the meaningfulness, communication and utilization of data.
III. Background

A. Definitions

The following definitions will assist in communicating the intended meaning of the concepts and details presented.

Assessment: measurement with an intent to improve. "Assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development."[9]

Institutional assessment: assessment of the institution as a whole (programs, services) and its impact on students, faculty, staff, and society.

Program assessment: assessment of an academic degree program using data collected at various phases in the program from students, alumni, faculty, employers, and others in order to determine the overall impact of the program on student growth and development in general and to assist in program improvements.

Student assessment: assessment of an individual student prior to, during and/or following a program, phase, or course in order to determine the student’s strengths, weaknesses, competencies, abilities, and perhaps grades and to assist the student in improving.

Outcomes assessment: generally refers to assessing those factors that are considered the outcome of the educational process. However, it may not help in understanding how students progress during that process.[9]

Program assessment plan: a plan, process or program for academic or student service program assessment.

B. Historical Background and Current Status

Assessment of individual student performance has always been a fundamental practice in higher education, but assessment of the academic process has only recently been accepted as a fundamental practice. The assessment of academic programs, student services and student life gained national attention in 1985 [9,10] and is now an integral practice at institutions of higher education. General principles that guide the development of assessment plans are provided in a set of nine principles for good assessment practices created by a panel of 12 experts in 1996.[11] A complete description of the nine principles appears in Appendix A.

1. The assessment of student learning begins with educational values.
2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.
3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.
4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.
5. Assessment works best when it is ongoing not episodic.
6. Assessment fosters wider improvement when representatives from across the educational community are involved.
7. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.
8. Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.
9. Through assessment, educators meet responsibilities to students and to the public.

Although assessment data have been collected for many years in academic institutions, the current movement is to assure the development of organized, comprehensive assessment plans. All 6 regional accreditation agencies for colleges and universities in the U.S.A. (Middle States, New England, North Central, Northwest, Southern, Western),[12, Appendix D] the 2 accrediting agencies for community colleges, and the vast majority of accrediting agencies for specific disciplines[4-7, Appendices D, G and K] have mandated the development of program assessment plans to ensure the collection, dissemination and utilization of data in a systematic, institution-wide and/or program-wide fashion. The American Council on Pharmaceutical Education (ACPE), for example, has initiated plans
for the extensive use of assessment data in its accreditation standards and self study guidelines.[4-7]

A total of 68 (84% of 81) colleges and schools of pharmacy responded to a survey on program assessment activities. As of January 2000, formal assessment activities were present in 38% of the colleges, informal assessment activities in 28% and plans to develop assessment plans in 34%. The average duration of program assessment activities was 2.6 years. A defined role in assessment activities were identified for faculty in 88% of those colleges of pharmacy responding, Deans (or Associate or Assistant Deans) in 78%, students in 40%, alumni in 31%, staff in 26%, other administrators in 22%, and others (employers, institutional assessment individuals, etc.) in 13%. A total of 16% of the colleges of pharmacy had a designated assessment director or manager. Formalized committee involvement included the curriculum or academic planning committee in 38%, an assessment committee in 32%, and the executive committee in 1% - with 3% of colleges indicating that multiple committees were involved in assessment activities. For colleges with ongoing program assessment activities, data were generally collected routinely in a planned manner (in 80% of those colleges) from numerous or essentially all sources (in 83% of those colleges) at intervals of 6 months on average. Data were used somewhat (52% of those colleges) or extensively (43% of those colleges) in course and/or curricular evaluation.

The focus on assessment has led to an increased allocation of resources, amounts of data collected, and expectations of assessment efforts. Well-designed, efficient, organized, meaningful, and acceptable assessment plans are needed for the assessment of student experiences both in and out of the classroom. Such a plan should be both university-wide and individual program-specific, but must also be well-known to and widely accepted by students, alumni, faculty and administration. The plan should assure that pertinent, valid data are collected, disseminated and used in a prospective manner in order to enhance students’ academic and nonacademic experiences at universities and colleges. Whenever possible, program assessment and academic activities, such as individual student assessment, need to be coordinated.

The vast majority of universities and colleges have developed outcomes assessment plans that are institution-wide and many institutions also participate in university or college system assessment plans. However, comprehensive assessment plans that coordinate institution-wide and program-specific assessment efforts are not yet commonplace. Appendix C contains a partial list of institutions that provide assessment data and/or plans on-line. The types of data commonly collected for institution-wide or global assessment include admission demographics, student progression, course evaluations, satisfaction surveys, licensing or certification examinations, and surveys of graduating seniors and alumni. Many of these data are readily available from institutional databases, but others require additional efforts and resources. The assessment of general education curricular components and specific academic programs is now the focus of initiatives at numerous institutions.

The number of references on assessment in higher education continues to expand (Appendix B). Descriptions and/or the results of the assessment activities are available on the web sites of numerous institutions and assessment organizations, groups and list-serves (Appendices C and D). Annual conferences are additional useful sources of information and networking opportunities (Appendix E). Finally, a number of vendors have created materials that are useful in institution-wide and general education assessment (Appendix F) – some of these instruments may be useful, particularly in the assessment of general abilities (see Sections XIV, XV, and XVI).

The development of a program-specific assessment plan utilizes principles that are very similar to those used in the development of an institution-wide assessment plan. However, the areas in need of assessment for academic programs involve discipline-specific sets of knowledge, skills, and behaviors in addition to general abilities. Academic programs are expected to further the development of general education curricular components or general abilities. The accreditation standards and guidelines from ACPE[4-7] and the CAPE Educational Outcomes document from AACP[1] demonstrate the need for the extension of general education elements (general abilities) into Doctor of Pharmacy curricula. Standard No. 3, Systematic Assessment of Achievement, from the 2000 Standards from ACPE, indicates the need for an ongoing assessment of outcomes. The ACPE standards and guidelines and the AACP CAPE Educational Outcomes document should be used in conjunction with the individual institution, college, school, department, faculty and Pharm.D. program’s mission/goals to determine what to assess (see Sections XIII to XVI). Statements on professional standards of practice or expectations of the pharmacist from professional and health care organizations also provide useful targets for assessment (Appendix G). Examples of program-specific assessment components, programs and results have been described for other disciplines.[Appendix K]
IV. Development of a Program Assessment Plan

The development, implementation and management of a successful, meaningful assessment plan is largely dependent on its design, the individuals responsible for its implementation and management, and the acceptance and participation by faculty, administrators, staff, students and alumni. The following describes the steps and components to be considered when developing such a program. Some of the Phases may overlap, particularly Phases I and II or Phases II and III.

A. Phase I: Environmental Scan
   1. Duration: one year or less
   2. Description of Current Ongoing Institution-Wide Assessment Plan(s)
      a. Program Description
      b. Personnel and Reporting Structure: director, committee, office, etc.
      c. Data collection, storage, dissemination, analysis, and use (in general)
      d. Proper interface
      e. Recommendation, suggestions, etc.
   3. Description of Current Program Specific Assessment Plans or Activities
      a. Program description
      b. Personnel and structure: director, committee, office, etc.
      c. Resources available
      d. Data collection, storage, dissemination, analysis, and use
   4. Commitment to, Interest in and Knowledge of Assessment from faculty, staff, and administrators
   5. Types of Data Already Collected – poll everyone/anyone
      a. Academic, administrative, student services departments or programs
      b. Individual student assessment activities in various courses
   6. Needs of
      a. College/School, program, faculty, administrators
      b. University/Institution as a whole
      c. Accrediting agencies
   7. Consider the initiation of limited data collection, compilation and dissemination.

B. Phase II: Program Assessment Plan Design
   1. Duration: one year or less
   2. Appoint a group of interested, knowledgeable individuals including those who will have eventual responsibility in the program and representing the major departments and disciplines at the college/school.
   3. Draft a description of the assessment plan created by the group
   4. Program description review by others at the college and institution including faculty, administrators, staff, alumnius, student(s)
   5. Finalize program description, including the development of a budget and resource needs
   6. Procure/allocate appropriate funding
   7. Appoint the program assessment officer(s) and committee members
   8. Collate and discuss any assessment data already collected.
   9. Create and begin to follow a schedule of assessment activities (see the next major section).
   10. Begin to communicate about assessment to faculty, staff, administrators, students, alumni, and others. Potential methods include:
       a. presentations at departmental, school, college, and university meetings
       b. school/college publications and web-site
       c. e-mail or surface mail
       d. assessment newsletter
       e. sponsor an assessment day with presentations of the general concepts of assessment, methods for program assessment, and of currently available assessment data collected by faculty, staff, and administrators
   11. Consider the initiation of limited data collection, compilation and dissemination.
C. **Phase III: Initial Implementation**

1. Duration: one to two years
2. The development of a program-specific assessment plan may appear, on the surface, to be an overwhelming task, but it should not be. Consider this short list of pertinent issues and assumptions.
   a. Get started as soon as possible.
   b. Use readily available resources as a guide for developing assessment plans and processes (AACP, ACPE, AAHE, university-wide documents, etc.)
   c. Start small and build over time.
   d. Start with data that you already have.
   e. Assess only those factors that are most important and of highest priority.
   f. Keep it simple and meaningful
   g. Begin to use the data immediately in decision making and in strategic planning.
   h. Continually improve the assessment process.
3. Collate, organize, review and analyze what assessment data are already available
4. Provide workshops and seminars on assessment.
5. Determine what factors should be assessed and then prioritize them based on need, availability of data, importance, and availability of resources.
6. Develop an implementation plan for each component of the program, including
   a. methods for handling data collection, storage, retrieval, analysis, dissemination, review, feedback and revision.
   b. initial data collection;
   c. initial data storage, entry, and retrieval
   d. initial data review and analysis
   e. report creation (of data and analysis)
   f. report dissemination, feedback and revision (school, college, university)
   g. resources: personnel, hardware, software
   h. faculty and staff development
   i. curricular and course review
   j. generation of abstracts, presentations, papers, grant proposals
7. Develop job descriptions for support staff (if appropriate) and initiate the applicant search
8. Hire/appoint/reallocate the needed personnel and procure computer and office resources
9. Select the highest priority items/factors for assessment and develop methods to assess them.
10. Initiate collection, storage, organization and review of data.
11. Gather feedback on the assessment plan and make any needed modifications.
12. Create the first and then annual assessment reports.
13. Perform an informal evaluation of the resource needs.
14. Explore the use and cost of standardized or other externally available assessment tools.
15. Continue to communicate assessment concepts, plans and activities using a variety of means (see above).
16. Modify and follow a schedule of assessment activities (see the next major section).

D. **Phase IV: Full Implementation**

1. Duration: ongoing
2. Enhance comprehensiveness, efficiencies, meaningfulness.
3. Provide workshops and seminars on assessment.
4. Produce annual assessment reports, incorporating program-specific and institution-wide data.
5. Disseminate assessment reports and/or summaries widely to the institution as a whole and beyond.
6. Perform an informal evaluation of the resource needs.
7. Explore the use and cost of standardized assessment tools.
8. Review the assessment plan yearly, with an indepth review every 2 to 4 years.
9. Continue to communicate assessment concepts, plans and activities using a variety of
10. Modify and follow a schedule of assessment activities. A sample schedule of assessment activities is provided below.

<table>
<thead>
<tr>
<th>Timing</th>
<th>Due Dates</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearly</td>
<td>August to September</td>
<td>Meet with incoming students to explain the rationale for and scope of the assessment plan and student responsibilities in assessment activities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform select formative program assessment measures in currently enrolled students (incoming and returning students).</td>
</tr>
<tr>
<td>October to November</td>
<td></td>
<td>Present assessment data from the previous academic year and demographic data from the current and the previous academic years to the faculty and administrators.</td>
</tr>
<tr>
<td>January to March</td>
<td></td>
<td>Prepare drafts of assessment reports followed by dissemination, review, revision and final approval by faculty and administrators.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform select formative program assessment measures in currently enrolled students.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete reports on how the assessment data were utilized and what program changes have been or will be implemented.</td>
</tr>
<tr>
<td>April to June</td>
<td></td>
<td>Perform summative program assessment measures in students who are about to graduate or enter another phase of study.</td>
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<tr>
<td></td>
<td></td>
<td>Determine which summative and formative measures should be measured in the next academic year.</td>
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<tr>
<td></td>
<td></td>
<td>Prepare an annual report, followed by dissemination to the college, university, and beyond (via web-site, publications).</td>
</tr>
<tr>
<td>Every 2-4 years</td>
<td></td>
<td>Perform a Comprehensive Review of the Assessment Plan.</td>
</tr>
<tr>
<td>Every 6 years</td>
<td></td>
<td>Perform a Comprehensive Program Review and/or accreditation self study.</td>
</tr>
<tr>
<td>Periodic</td>
<td></td>
<td>Determine the need for targeted assessments - then plan and perform targeted assessments.</td>
</tr>
</tbody>
</table>
V. Activities in an Assessment Plan

The Teaching-Improvement Loop
(from the Framework for Outcomes Assessment,
Middle States Commission on Higher Education, 1996)

Components of a Planning and Evaluation Process
(from Resource Manual on Institutional Effectiveness, 2nd edition, 1989,
The Commission on Colleges of the Southern Association of Colleges and Schools)

A. Development of the Goals and Purposes of the Program Assessment Plan
1. The Major Goals of an assessment plan are to improve and/or enhance:
   a. student learning; and
   b. student life.
2. Secondary Goals of an assessment plan in pharmacy education are to improve and/or enhance:
   a. student-centered assessment activities;
   b. the satisfaction of:
      (1) students and their families,
      (2) alumni,
      (3) employers of graduates,
      (4) patients,
      (5) other health care professionals,
      (6) college faculty and staff,
      (7) the local community, and
      (8) politicians and others providing funding for the college;
   c. success of the overall pharmacy program;
   d. the university-wide assessment activities;
   e. the self study report for accreditation;
   f. the delivery of health care.
3. Additional Purposes or Uses of assessment data include:
   a. determination of resource allocation;
b. marketing of academic institutions and their programs;
c. analyzing cost-effectiveness or cost-benefit of the design and delivery of courses and curricula;
d. conducting educational research.

B. Determination of What Needs to be Assessed
1. Program, curriculum and course goals and objectives
2. Professional and societal needs
3. University Assessment Plan global and program/department specific elements
4. Accreditation Organization global and program/department specific elements
5. Program specific issues (problems, strengths, weaknesses, etc.)

C. Data Collection and Retrieval
1. Determine the best way to collect each type of data
2. Retrieve data that are already available from
   a. The University or support departments (registrar, admissions, etc.)
   b. The College, School, or Department
   c. Faculty from individual projects and courses
   d. Students directly
   e. Testing agencies, professional licensing agencies, employers, etc.
3. Create the appropriate data collection methods and instruments
4. Validate the tools, instruments if possible
5. Collect the data

D. Data Storage
1. If the data are needed or utilized globally at the University, contact the director of institutional data or institutional research
2. If the data are not needed or utilized globally at the University, store the data in a readily retrievable electronic format that can be updated and supplemented yearly. Use an up-to-date, institutionally supported database or spreadsheet program.

E. Data Presentation and Analysis
1. Create tables and graphs of raw and summary data
   a. Create and utilize standardized formats
   b. Analyze trends over time when possible, particularly before and after curricular changes
2. Provide summary descriptions of the data
   a. Measures of central tendency: means, medians, mode, etc.
   b. Measures of dispersion: ranges, frequencies, standard deviations, etc.
3. Analyze the data using comparative associative statistical tests (chi-squared, t-tests, ANOVA, nonparametric tests, regression, multivariate analysis, perceptual maps, etc.) when appropriate

F. Dissemination of Assessment Data, Analyses and Reports
1. Methods of dissemination of assessment data and analyses
   a. Annual Assessment Reports: yearly
   b. Publicly accessible assessment information (web-site, publications, etc.)
   c. Restricted accessible assessment information (intra-net, etc.)
   d. Comprehensive Program Review or Accreditation Self-Study: every 4-6 years
   e. Comprehensive Review of the Assessment Plan: every 2-4 years (see below)
2. Disseminate assessment data and analyses to appropriate administrators, faculty, committees and task forces
3. Create assessment reports containing the following basic elements
   a. Description of the assessment performed: purpose, rationale, methods
   b. Description of the results, referencing summary data tables and graphs
   c. Tables and graphs of summary data
i. concise tables and graphs may be incorporated into the report

ii. lengthy and/or large numbers of tables and graphs may be better presented as appendices or attachments

d. Planned and proposed utilization of the results

e. Conclusions

4. Share the above reports or pertinent parts with the following for review, revision and final approval
   a. Program/department director(s), faculty, dean(s), other academic administrators, and other decision-makers at the school/college level
   b. Curriculum, executive, academic planning, and assessment committees
   c. Accreditation self-study committee or program review panel

5. Complete the above reports and disseminate appropriate reports or components to
   a. Program/department director, faculty, dean, other academic administrators, and other decision-makers at the school/college level
   d. Committees: curriculum, executive, academic planning, assessment, student service
   e. Accreditation self-study committee or program review panel
   b. Director of institutional data or institutional research, Institution-wide assessment committee
   c. Accreditation agency (when appropriate)
   d. Students and alumni
   e. Prospective students and employers of graduates
   f. Government legislators (if appropriate)
   g. The profession, academy, and public

G. **Data Utilization**

1. Determine a prospective method for utilization of the data. This may include adding the use of the data to the charge for a committee or administrator.
2. Determine the presence of major and minor findings
3. Discuss the need for curricular, academic, student life program change
4. Discuss the need for further assessment of specific elements
5. Make the necessary changes if appropriate, through appropriate channels
6. Complete the plans the next assessment
7. Complete the accreditation or program review reports (when due)

H. **Assessment/Evaluation of the Assessment Plan**

An assessment or evaluation of the assessment plan should include assessments of the plan’s:

1. Organization and Design
2. Processes
3. Methods
4. Efficiency
5. Comprehensiveness: Assessment of Major Factors
6. Acceptance and Participation by students, alumni, faculty, staff and administrators
7. Dissemination and Utilization of Data
8. Overall Impact
9. Resources
VI. Administration and Management of an Assessment Plan

A. General Model

   A number of models can be used to develop, implement, and maintain a program or outcomes assessment plan. The administrative structure for such a plan is dependent upon the preferences of academic administrators or faculty governance officers responsible, the culture of the institution, and the goals and expectations of the assessment plan. However, the following general model provides a structure to meet the needs for an assessment plan.

1. Leader(s)
2. Standing Committee or Advisory Group
3. Academic and Student Service Administrators
4. Faculty and Staff
5. Students, Alumni, Employers, etc.
6. Support Personnel
7. Consultants (if needed)

B. Leader(s): Assessment Officer(s), Committee Chair or Co-Chairs

1. Roles and Responsibilities
   a. Organize and coordinate assessment activities and responsibilities
   b. Analyze, summarize and disseminate information
   c. Oversight and management of the assessment plan
   d. Chair or co-chair the assessment committee
   e. Manage support personnel
   f. Publish manuscripts and/or present talks or abstracts on assessment
2. Candidates
   a. Associate or Assistant Dean
   b. Faculty member
   c. Specialist (education, assessment)
3. Reports to (depending upon the institution)
   a. College Dean or designate (Assistant/Associate Dean for Academic Affairs)
   b. Head of College’s Faculty Government
   c. College faculty as a whole and/or specific committees as appropriate

C. Program Assessment Committee or Advisory Group

1. Roles and Responsibilities
   a. Develop methods to enable all faculty and academic administrators plus students and alumni to become knowledgeable of, widely accept and become intimately involved in the assessment plan.
   b. Define the main program-specific and general outcomes variables that require routine assessment by academic, student service/life, and alumni departments;
   c. Create and maintain a program and possibly a college-wide plan to collect, store, retrieve, disseminate, and use accurate assessment data for the major outcomes variables and other assessment data in a continual organized, efficient manner;
   d. Provide guidelines for the collection, storage, retrieval, dissemination and use of assessment data;
   e. Assure the currency of available assessment tools and research findings;
   f. Evaluate the assessment data collected and the assessment plan every one to two years with respect to confidentiality, effort expended, responsibility, data consistency, coordination, and efficiencies;
   g. Recommend modifications in the collection, storage, dissemination, and use of assessment data
   h. Create a college-wide yearly assessment report;
   i. Serve as a resource to guide the collection, storage, interpretation and use of data;
   j. Facilitate college-wide and university-wide discussions regarding the coordination, etc. of global and specific assessment data collection, storage,
dissemination, and use;
k. Track the use of assessment data and its impact;
l. Evaluate the assessment plan every 2 to 4 years and report the findings and recommendations to the Dean, other academic administrators and faculty;
m. Form Subcommittees and Task Forces, if needed, to enhance the effectiveness and efficiency of assessment.
n. Collaborate on assessment manuscripts and presentations.

2. Membership
   a. Faculty: at least one from each academic department, pharmacy discipline, and/or major course (course coordinator(s))
      a. Assessment Officer (if present)
      b. Academic Administrator (Directors, Department Chairs, Assistant/Associate Deans): at least one
      c. General Assessment ‘Expert(s)’: Institution-wide Assessment officer or committee member, Director of Education or Teaching and Learning Center (if available)
      d. Student Services Administrator(s) and/or Staff: at least one
      e. Information Manager (if present)
      f. Alumnus
      g. Student (possible an officer of Student Government)
      h. Supportive personnel (may be ex officio)
      i. Dean (ex-officio)

3. Committee or Advisory Group Leadership
   a. Chairperson: Assessment Officer, faculty, or administrative member
   b. Secretary: Assessment Officer, faculty, or administrative member

4. Reports to (depending upon the institution)
   a. College Dean and/or Assistant/Associate Dean for Academic Affairs
   b. Assessment Officer
   c. Head of College’s Faculty Government or specific committee
   d. College faculty as a whole and/or specific committee

D. Academic and Student Service Administrators (associated with entry-level and nontraditional Doctor of Pharmacy programs)

1. Roles and Responsibilities
   a. Creation, organization and management of a program/department specific system to collect, store, validate, disseminate, analyze and use assessment data for their program/department
   b. Collection of global and program/department specific data
   c. Reporting of program/department specific data through appropriate channels
   d. Analysis and evaluation of program/department specific and pertinent global assessment data

2. Membership
   a. Directors of Academic Programs/Curricular Components, Academic Administrators
      (1) Program director(s)
      (2) Course coordinators of major courses
      (3) Experiential and laboratory directors
      (4) Department chairs
      (5) Dean and Assistant/Associate Deans
   b. Directors of Student Services/Student Life Programs;
      (1) Student advising
      (2) Student organization advisors
      (3) Financial aid
      (4) Counseling and health services
      (5) Non-traditional and international student services
      (6) Academic support services
(7) Admissions
(8) Career counseling & placement service

c. Faculty governance and committees
   (1) Head of Faculty Governance
   (2) Committee Chair: curriculum, academic planning committees

3. Concerns
   a. Balance of responsibility, authority and accountability
   b. Training and expertise

E. Faculty, Staff and Administrators (in general)
1. Roles and Responsibilities
   a. Assist in determining the items to be assessed and the general methods of assessment;
   b. Participate in the collection of assessment data when asked;
   c. Provide opportunities for the collection of assessment data when possible;
   d. Communicate, through the appropriate channels, any assessment data that are collected.
   e. Participate in the analysis and evaluation of assessment data;
   f. Utilize assessment data and other data when making decisions and/or reconsidering the design and delivery of curricula and courses.
   g. Serve, if asked, on an external review panel for the assessment plan.
2. Membership: all faculty and certain staff and administrators are likely participants
3. Fundamental attributes prior to beginning assessment activities
   a. The enhancement of students’ knowledge, skills and behaviors of students by improving academic programs and their associated services is a major goal in higher education and pharmacy education.
   b. Pharmacy faculty, administrators and some staff have the fundamental ability to create and implement methods for the collection, communication, analysis and utilization of assessment data as a result of the training and practice within their discipline. Familiarity with and/or training in the methods and instruments used in assessment will enable faculty to readily become proficient in assessment activities.
   c. Many pharmacy faculty are proficient in measuring and utilizing outcomes data as they relates to pharmaceutical products and services.
   d. Many pharmacy faculty and administrators have been involved in creating self-study reports for ACPE accreditation, which is essentially a collection of various types of assessment data.
4. Concerns
   a. Workload balance and quantity
   b. Training and expertise
   c. Recognition and rewards for assessment activities

F. Students, Alumni, Employers, etc.
1. Roles and Responsibilities
   a. Provide honest, accurate information;
   b. Perform at the highest level possible in demonstration of skill and knowledge levels;
   c. Serve on assessment, curriculum and/or advisory committees when asked.
   d. Assist in the interpretation of assessment findings and in the recommendation of future assessment activities when asked.
2. Membership: all students and alumni are likely participants
   a. All students and alumni are likely participants
   b. Student and alumni representatives on committees may be elected student officers, selected or volunteers
   c. Select employers and others involved in pharmacy education are likely participants
G. Support Personnel
1. Roles and Responsibilities
   a. Assist in the development of survey and other data collection instruments
   b. Collect, file and retrieve data
   c. Facilitate the storage of data and reports
   d. Statistically analyze data
   e. Create tables, graphs, reports
   f. Type and disseminate reports
   g. Schedule meetings and take minutes of meetings

2. Membership
   a. Database management personnel
   b. Data entry clerks
   c. Secretarial, clerical personnel

H. Consultants
1. Roles and Responsibilities (examples)
   a. Assist in the design, implementation and evaluation of the assessment plan
   b. Assist in the design of survey instruments and other methods of data collection
   c. Perform or make recommendations for the appropriate statistical analyses

2. Membership
   a. General assessment consultants
   b. Specific assessment consultants
   c. Specific tools consultant (survey instruments, statistical packages, etc.)

I. Anticipated Resources
1. Personnel
   a. Assessment Officer, Director of Program Assessment, Committee Chair:
      varies: generally 25% to 100% full-time employee (FTE) or release time
   b. Administrative Secretarial/Technical/Clerical support:
      varies: generally 50% to 100% FTE
   c. Committee activities (assessment, curriculum or other committees)

2. Materials and Space
   a. Hardware
      (1) Computer(s) with communications hardware
      (2) Printer(s)
      (3) Desk, chair, file cabinets
   b. Software – standard on each computer, except as noted
      (1) Word-processing
      (2) Communication
      (3) Spreadsheet and/or Database
      (4) Presentation
      (5) Statistical
   c. Office and Storage Space

3. Awards, Grants, Recognition
   a. A reward system should be put into place for those individuals and departments
      who provide substantial contributions to the University’s assessment activities.
      Rewards could be in the nature of awards, grants, summer salary, release time,
      etc.
   b. Appropriate recognition for assessment activities should be part of annual
      evaluations and during promotion and tenure considerations.

4. Training, Awards
   a. Faculty
      (1) Training in assessment should be provided to the assessment officer, at
          least one member of each department, at least one member of the
          coordinating team for each major course or curricular component.
(2) Utilize on-campus seminars or workshops when possible
(3) Attendance at national meetings (Appendix E)

b. Support personnel
(1) Use of software and hardware
(2) Utilize on-campus resources

c. Students
(1) Orientation program and materials are needed
(2) Training may be needed, depending upon the assessment process

5. Standardized Assessment/Testing Instruments
a. Select standardized assessment instruments may be purchased. These are generally validated assessment methods that also allow benchmarking.

b. Professional Abilities Outcomes of Pharm.D. programs
   (1) Currently there are no standardized instruments available that directly apply to professional competencies for Doctor of Pharmacy students.

c. General Abilities Outcomes of Pharm.D. programs
   (1) Standardized instruments may be available from commercial agencies for select General Abilities (see Appendix F).

6. Resource Planning
a. This will need yearly assessment.

b. Personnel budgets are expected to stay fairly constant (4% increase per year), unless the amount of data collected increases dramatically, then increased technical and/or clerical support will be needed.

c. The materials and training budgets are expected to increase by 50% or more for the first 2 years or so, and then stabilize. Computer replacement should be expected every 3 to 5 years.
VII. Definitions: General Types of Assessment Data

In general, assessment data that are collected can be categorized as summative or formative; direct or indirect; quantitative or qualitative; and global, general education or program-specific. Good assessment practices involve the collection of data from essentially all of these categories, which provides for a more thorough assessment of curricular and program design and delivery.

A. Summative and Formative Data

The differentiation between summative and formative data center on the general purpose and timing of data collection and on the use of the data.

**Summative data** provide an overall assessment of students’ entire experiences at the college or university. These data are generally collected near or after graduation or the time of departure (for those not graduating) from the institution. Summative data can also be collected at the end of a course or course series. These data are useful in providing an assessment of the entire degree program, course series, or course. An example of summative data would be the success rate on passing a licensure examination or a comprehensive/high stakes evaluation.

**Formative data** provide an assessment of student development as they progress through the academic program. These data are collected at various periods of time during the students’ educational and other experiences while enrolled in the program. Formative data on a specific ability, skill, knowledge or attitude are best when collected in a systematic, routine manner at pre-selected intervals in order to follow development of that attribute. For example, data on verbal communication skills collected every one to two years could be very useful formative data.

B. Direct and Indirect Measures

The major differences between direct and indirect measures are based on the relationship between the method of assessment and the actual performance of the outcome.

**Direct measurement** of an outcome involves the evaluation of the outcome itself. The skill, ability, knowledge or behavior is tested, observed or measured directly.

**Indirect measurement** of an outcome does not directly measure the outcome, but rather evaluates a factor that can be linked back to that specific outcome. Examples would include the use of employers' perceptions of the graduates' abilities or using the percentage of students passing the NAPLEX as a reflection of the students' overall knowledge base.

C. Quantitative and Qualitative Data

Quantitative and qualitative data differ in the ability to measure the outcome by a number scale or by a characteristic.[13]

**Quantitative data** are measured using numbers (quantity, amount, intensity, or frequency) and analyzed looking for associations among variables. Examples include the numbers and percentage of students progressing to graduation within four years and the average raw and percentage scores on a comprehensive or high stakes examination.

**Qualitative data** include characteristics, interpretations, historical perspectives, and experiences that are used to study processes and meanings. Types of service learning that students participate in and student suggestions for program improvement are examples of qualitative data.

D. Global, General Education, and Discipline-Specific Data

Various categories of data are needed based on their specificity to the specific program being assessed. Three main categories of these data include global, general education or general abilities, and program-specific data.

**Global data** are available on all students and have both university-wide and program-specific implications. These data should be collected and assessed on a yearly basis by each academic program and student service department and by other pertinent departments.

1. Demographics of Applicants, Students, Graduates, and those who did not graduate
2. Satisfaction (ability to meet expectations, etc.) with Programs and Services
3. Participation in and Utilization of Services and Programs
4. Results of Placement Exams, Proficiency Tests and Proficiency/Remedial Courses
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5. Academic Performance and Progression, Persistence, Retention, Graduation Rates
6. Performance in Licensure, Certification, etc.
7. Performance in Graduate School and Professional School Aptitude Tests
8. Placement and Advancement after Graduation

General education data or general abilities data involve measures of those abilities that are needed to succeed in society as a citizen, graduate of higher education, and professional. These abilities are extensions of liberal and general education, but are expanded and enhanced to include those attributes needed to meet the social responsibilities of health care professionals. General abilities are discussed below, but are included in the following from the CAPE Educational Outcomes.[1]

1. Thinking skills (critical thinking, problem solving)
2. Communication skills
3. Valuing and ethical behavior
4. Social interaction and interpersonal skills
5. Social context
6. Social responsibility
7. Self learning and commitment to learning
8. Professionalism
9. Time and resource utilization
10. Use of constructive feedback
11. Stress management

Discipline- or program-specific assessment data differentiate the discipline (of pharmacy, for example) from other disciplines and are defined by the academic program; professional or discipline academic accrediting agencies; and by members, employers, and regulators of the discipline or profession. The expected outcomes for Doctor of Pharmacy programs are described in the 2000 Standards from the American Council on Pharmaceutical Education (ACPE), the CAPE Educational Outcomes document from AACP, and NAPLEX and MJPE Competencies from NABP.[1,4-8, Appendix G] The following are components of program assessment that are discussion in further depth below.

1. Curriculum or Program Design and Individual components
2. Specific Knowledge
3. Specific Skills
4. Behaviors and Attitudes
5. Accessibility
6. Satisfaction, Meeting Students’ Needs and Goals
VIII. Overview: Collection of Assessment Data

Colleges and schools of pharmacy should choose a variety methods to collect basic and additional or supplemental data from a variety of sources based on the goals and development of their assessment plans. A highly efficient method of collecting assessment data on student performance involves the collection of one set of data that provides an assessment of the program, the course, and the individual student. Importance, validity, application and efficiency are issues that need to be considered when selecting methods to use.

<table>
<thead>
<tr>
<th>Source of Data</th>
<th>Interval</th>
<th>Types of Data Collected (see descriptions below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registrar and Other Administrative Records (Admissions, Financial Aid, Dean's Office, etc.)</td>
<td>1 Year</td>
<td>Demographics of Applicants, Students and Graduates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Registration, participation, utilization and retention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Results of placement and proficiency exams, etc.</td>
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<tr>
<td></td>
<td></td>
<td>Academic progression</td>
</tr>
<tr>
<td>Students: Written Surveys or Focus Groups (includes admission surveys, course evaluations)</td>
<td>1 Year</td>
<td>Demographics of Applicants, Students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Satisfaction with the curriculum, courses and programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall curriculum or program design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment Plan activities</td>
</tr>
<tr>
<td>Student Advisory Groups or Class Meetings</td>
<td>1-6 Months</td>
<td>Satisfaction with the curriculum, courses and programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall curriculum or program design</td>
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<tr>
<td></td>
<td></td>
<td>Assessment Plan activities</td>
</tr>
<tr>
<td>Student Performance Assessments</td>
<td>1 Week to 1 Year</td>
<td>General abilities</td>
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<tr>
<td></td>
<td></td>
<td>Discipline-specific abilities</td>
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<tr>
<td></td>
<td></td>
<td>Other skills behaviors and attitudes</td>
</tr>
<tr>
<td>Graduating Seniors or Other Exiting Students: Written Surveys, Focus Groups, One-on-one Interviews</td>
<td>1 Year or at Time of Exit</td>
<td>Satisfaction with the curriculum, courses and programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall curriculum or program design</td>
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<tr>
<td></td>
<td></td>
<td>Performance in licensure, certification, and major achievement examinations</td>
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<td></td>
<td></td>
<td>Performance on aptitude tests for graduate and professional schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment Plan activities</td>
</tr>
<tr>
<td>Licensing and Other Testing Agencies</td>
<td>1 Year</td>
<td>Performance in licensure, certification, and major achievement examinations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Performance on aptitude tests for graduate and professional schools</td>
</tr>
<tr>
<td>Alumni: Written Surveys or Focus Groups</td>
<td>1-5 Years</td>
<td>Satisfaction with the curriculum, courses and programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall curriculum or program design</td>
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<tr>
<td></td>
<td></td>
<td>Performance on aptitude tests for graduate and professional schools</td>
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<td></td>
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<td>Placement after graduation</td>
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<td>Career progression</td>
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<tr>
<td>Employer Surveys or Focus Groups</td>
<td>1-4 Years</td>
<td>Satisfaction with the curriculum, courses and programs</td>
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<td></td>
<td>Overall curriculum or program design</td>
</tr>
<tr>
<td>Faculty Meetings or Focus Groups</td>
<td>3-12 Months</td>
<td>Satisfaction with the curriculum, courses and programs</td>
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<tr>
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<td></td>
<td>Overall curriculum or program design</td>
</tr>
<tr>
<td>Dean's Advisory Group</td>
<td>0.5 - 2 years</td>
<td>Satisfaction with the curriculum, courses and programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall curriculum or program design</td>
</tr>
</tbody>
</table>
A. Demographics of Applicants, Students and Graduates: for univariate analysis and multivariate analysis with other assessment measures if possible
1. Data collection: Yearly
2. Data collection methods: institutional records, surveys
3. Basic types of data to be collected
   a. Gender
   b. Ethnicity
   c. Age
   d. SAT scores and high school rank
   e. Freshman start or transfer student
   f. Traditional or nontraditional student
   g. Prior college, GPA, class rank and degree(s) earned
4. Additional or supplemental types of data to be collected
   a. PCAT and GRE scores (if available)
   b. Work history, particularly in the field of study
   c. Volunteer activities
   d. Extra-curricular activities
   e. Admissions data: number of applications, yields, and acceptance rates
5. Use of these data
   a. Determine the characteristics and the academic strength of the applicant pool and students entering the program.
   b. Possibly determine which student characteristics correlate with success in the program.

B. Satisfaction of Students, Graduates, Faculty and Employers with the curriculum, courses and programs offered.
1. Data collection: Yearly, but variability based on individual methods used
2. Data collection methods: numerous (see above) including surveys, course evaluations, focus groups, one-one-one interviews, advisory groups, class meetings, exit interviews, and faculty meetings
   a. Written Student Surveys: every 1 to 3 years
   b. Student Advisory Groups: every 6 to 12 months
   c. Student Focus Groups: every 1 to 3 years
   d. Class Meetings: monthly to yearly
   e. Exit Interview or Survey: yearly
   f. Alumni Written or Verbal Surveys, Focus Groups: at 1 to 5 year intervals over at least 10 years following graduation
   g. Faculty Meetings: every 3 to 12 months
   h. Employers: every 1 to 4 years
3. Basic types of data to be collected
   a. Perception of what is needed from the academic program and student service.
   b. Satisfaction overall and specifically for courses, major curriculum
   c. Strengths, weaknesses, missing components, unnecessary elements
   d. Suggestions for improvement
4. Additional or supplemental types of data to be collected
   a. Satisfaction for specific elements (residence halls, student life, programming, advising, courses, curriculum (core curriculum, general education, major), teaching facilities, resident advisors, peer counselors, tutors, student workers, placement services, safety, etc.)

C. Registration, Participation, Utilization and Retention in the Program
1. Data collection: Yearly
2. Data collection methods: institutional records
3. Basic types of data to be collected
   a. Number and percent of students participating or beginning the academic year
b. Number and percent of students utilizing the service
c. Number and percent that are retained from one year to the next

4. Additional or supplemental types of data to be collected
   a. Impact of retention programs
   b. Impact of academic regulations (University-wide and program specific)
   c. Student demographics

5. Use of these data
   a. Assessment of incoming student abilities
   b. Relative difficulty of the curriculum or portions of the curriculum
   c. Impact of academic regulations and of retention programs
   d. Association of student characteristic with difficulty in the program

D. Results of Placement Exams (writing, TOEFL, math, advanced placement for incoming students) and Proficiency Tests or Courses (writing, computer, and others as required by the major field of study during the course of study)
   1. Data collection: Yearly
   2. Data collection methods: institutional records, testing agency reports
   3. Basic types of data to be collected
      a. Passing rate of initial examinees and those repeating
      b. Means, standard deviations, ranges, frequency distributions
      c. Placement in remedial, normal, honors, and advanced courses
   4. Additional or supplemental types of data to be collected
      a. Student demographics
   5. Use of these data
      a. Association of student characteristic with difficulty in the program

E. Progression to the next level of achievement, year of study, graduation, etc.
   1. Data collection: Yearly
   2. Data collection methods: institutional records, high stakes evaluation results
   3. Basic types of data to be collected
      a. GPA: by year, by type of student (ESL, transfer-straight through, at risk, etc.)
      b. Number and percent of students who stay/do not stay on standard progression to graduation (persistence rates, graduation rates)
      c. Average and range of the amount of time in the program prior graduation (relative to the time of program entry)
      d. Number and percent of students successfully completing high stakes evaluations
   4. Additional or supplemental types of data to be collected
      a. Reasons for delays in progression
      b. Change in the major: number of students, reasons, and performance before and after the change
      c. Average and range of scores from high stakes evaluations
      d. Performance in specific components of high stakes evaluations
      e. Student demographics
   5. Uses of these data
      a. Association of student characteristics with progression and performance in high stakes evaluations

F. Overall Curriculum or Program Design
   1. Data collection: Yearly
   2. Data collection methods: surveys, focus groups, class meetings, advisory groups, evaluation of curricular and course documents, exit interviews
   3. Basic types of data to be collected
      a. General ability development
      b. Professional curriculum design
      c. Strengths, weaknesses, redundancies, omissions
   4. Additional or supplemental types of data to be collected
a. Minor program  
b. Student services and programs  
c. Advising  
d. Prerequisite courses or competencies  

5. Uses of these data  
a. Overall program revision  
b. Prerequisite revision  

G. General Abilities  
1. Data collection: Every semester to Yearly  
2. Data collection methods: assessment tests, embedded assessment, student portfolios, comprehensive evaluations, capstone experiences or courses, self-assessment, grading forms  
3. Types of data to be collected (from CAPE Educational Outcomes)  
The following set of abilities, attitudes and competencies are taken directly from the AACP CAPE document on Educational Outcomes,[1] but further details are available in that document. Additional sources include ACPE 2000 Accreditation Standards for Doctor of Pharmacy Programs,[4] professional organization documents (Appendix G), pharmacy practice acts, and the college's program description.  

Students should be able to [1]:  
a. Think critically, solve complex problems, and make informed, rational, responsible decisions within scientific, social, cultural, legal, clinical, and ethical contexts.  
b. Communicate clearly, accurately, and persuasively with various audiences using a variety of methods and media.  
c. Make rational, ethical decisions regarding complex personal, societal, and professional situations within a context of personal and professional values.  
d. Demonstrate the ability to place health care and professional issues within appropriate historical, cultural, social, economic, scientific, political, and philosophical frameworks, and demonstrate sensitivity and tolerance within a culturally diverse society.  
e. Demonstrate an appreciation of the obligation to participate in efforts to help individuals and to improve society and the health care system.  
f. Function effectively in interactions with individuals, within group situations, and within professional organizations and systems.  
g. Self-assess learning needs and design, implement, and evaluate strategies to promote intellectual growth and continued professional competence.  
h. Effectively use computers.  
4. Other types of data to be collected (may overlap with those listed above)  
a. Maturation or mature/immature behavior  
b. Professionalism  
c. Ethics  
d. Group dynamics, team player  
e. Stress management  
f. Time management  
g. Commitment to learning  
h. Multi-cultural awareness  
i. Personal habits and appearance: high-risk behaviors, substance use/abuse  
j. Disciplinary action  
k. Interpersonal  
l. Time and other resource utilization  
m. Creativity  
n. Productivity  
o. Learning skills  

5. Uses of these data  
a. Strengths and weaknesses of the overall program and specific courses  
b. Admission criteria
H. Knowledge: General or Specific to the Major, Minor, Program, Service
1. Data collection: Every semester/quarter to Yearly
2. Data collection methods: assessment tests, embedded assessment, student portfolios, comprehensive evaluations, capstone experiences or courses, self-assessment, grading forms
3. Types of data to be collected
   The professional competencies of the Doctor of Pharmacy program documented in the ACPE 2000 Accreditation Standards are listed below.[4] Additional sources include the AACP CAPE Educational Outcomes document,[1] NABP NAPLEX and MJPE Competencies,[8] professional organization documents (Appendix G), pharmacy practice acts, and the college's program description. The determination of which set of professional competencies to use is generally not a major factor, since most sets of competencies are fairly similar. The highest priority for which to use should be given to those competencies from the institution’s specific academic program and from the accrediting agency (ACPE) and the licensing agency (NABP). It is impractical to attempt to assess all of these professional competencies in a comprehensive, in-depth manner in students, particularly when initiating a program assessment plan. Therefore, these items should be prioritized based on pre-selected criteria and efforts to assess the top few items should be implemented. Consider using a 3 to 5 year cycle for assessment of each competency to be assessed. Over time, many if not all of these competencies could be assessed.

   Students graduating from a Doctor of Pharmacy Program should be able to [4]:
   a. Evaluate drug orders or prescriptions, accurately and safely compound drugs in appropriate dosage forms, and package and dispense dosage forms;
   b. Manage systems for storage, preparation, and dispensing of medicines, and supervise technical personnel who may be involved in such processes;
   c. Manage and administer a pharmacy and pharmacy practice;
   d. Apply computer skills and technological advancements to practice;
   e. Communicate with health care professionals and patients regarding rational drug therapy, wellness, and health promotion;
   f. Design, implement, monitor, evaluate, and modify or recommend modifications in drug therapy to insure effective, safe, and economical patient care;
   g. Identify, assess, and solve medication-related problems, and provide a clinical judgment as to the continuing effectiveness of individualized therapeutic plans and intended therapeutic outcomes;
   h. Evaluate patients and order medications and/or laboratory tests in accordance with established standards of practice;
   i. Evaluate patient problems and triage patients to other health professionals as appropriate;
   j. Administer medications;
   k. Monitor and counsel patients regarding the purposes, uses, and effects of their medications and related therapy;
   l. Understand relevant diet, nutrition, and non-drug therapies;
   m. Recommend, counsel, and monitor patient use of nonprescription drugs;
   n. Provide emergency first care;
   o. Retrieve, evaluate, and manage professional information and literature;
   p. Use clinical data to optimize therapeutic drug regimens;
   q. Collaborate with other health professionals; and
   r. Evaluate and document interventions and pharmaceutical care outcomes.
4. Uses of these data
   a. Strengths and weaknesses of the curriculum and courses

I. Performance in licensure, certification, and major achievement examinations
1. Data collection: Yearly
2. Data collection methods: results from licensure/certification/examination agency, survey, one-on-one interview
3. Basic types of data to be collected
   a. Passing rate and average score of those taking the examinations
   b. Results nationally, regionally or from other institutions

4. Additional or supplemental types of data to be collected
   a. Ranges of scores
   b. Individual scores and scores on separate components of the examination (if available)
   c. Number of tries needed to pass
   d. Benchmarks: national, regional, peer colleges/schools
   e. Graduate demographics

5. Uses of these data
   a. Overall ability of graduates in these examinations
   b. Areas of strength and weakness of graduates, program, timing of courses
   c. Association of graduate characteristics with success and failure on these examinations

J. Performance on Aptitude Tests for Graduate School and Professional School Entrance
1. Data collection: Yearly, variable based on methods used (every 1 to 5 years)
2. Data collection methods: examination agency results, alumni surveys
3. Basic types of data to be collected
   a. Number of students that take GRE, GMAT, MCAT, LSAT, etc.
4. Basic types of data to be collected
   a. Average scores, ranges
   b. Graduate demographics and performance in the program
5. Uses of these data
   a. Strengths and weakness of the program
   b. Need for tracking options or specialized courses

K. Placement after Graduation in job, training program, graduate or professional school
1. Data collection: Yearly, variable based on methods used (every 1 to 5 years)
2. Data collection methods: institutional records, surveys (graduation, alumni, employer), focus groups, one-on-one interviews, exit interviews
3. Types of data to be collected
   a. Application and acceptance to graduate and post-graduate training programs
   b. Successful placement in position of choice
4. Uses of these data
   a. Need for placement service
   b. Need for development of job seeking skills

L. Assessment Activities: Participation, Assessment
1. Data collection: Yearly updates/review, Every 2 to 4 years for comprehensive review
2. Data collection methods: surveys, advisory groups, focus groups, class meetings
3. Types of data to be collected
   a. Participation: extent, level (how hard did the student try)
   b. Assessment activities: purpose, use, interference, comments, suggestions
4. Uses of these data
   a. Revision of assessment plan, methods, timing
IX. Examples: Specific Assessment Techniques

The following descriptions of select assessment techniques are to be used in conjunction with the previous section. Ideally, formative assessment methods should provide program and individual student assessment, but this may not always be possible. Summative assessment methods provide program assessment data, but usually do not provide individual student assessment data. It is also important to determine the goal of the assessment method (or what is intended to be assessed).

This section is broken down into the following sub-sections:
A. Surveys
B. One-On-One Interviews
C. Focus Groups
D. Advisory Groups
E. Class Meetings
F. Embedded Assessment: Pre-Course Assessment
G. Embedded Assessment: Course Exercise or Experience
H. Embedded Assessment: Course Examinations and Evaluations
I. Capstone Course or Experience
J. Student Portfolios
K. Special Assessment Sessions Outside of Class
L. Comprehensive or High Stakes Assessments
M. Self Assessment with Review by Faculty
N. Self Assessment Surveys: Abilities
O. Course Evaluation and Review
P. Experiential Sites and Major Employers
Q. Alternative Assessments or Criterion-Referenced Assessment
R. Annual Departmental, Program, College Reports
S. Periodic Program Review
T. Faculty Teaching Portfolios

A. Surveys
1. Surveys are relatively efficient means of collecting a variety of types of data.
2. Types and uses of surveys
   a. Written
   b. Verbal
      (1) One-on-one Interviews (see below)
      (2) Focus Groups (see below)
3. Issues
   a. Design of the instrument
   b. Validation of the instrument
   c. Somewhat inefficient to create, but efficient to analyze if designed appropriately
4. Data types
   a. Objective data: dates, number of positions, etc.
   b. Perceptions and opinions: satisfaction, strengths, weaknesses, etc.
   c. Likert scaled data (i.e. Strongly Agree to Strongly Disagree)
   d. Open ended responses (but may be difficult to code for analysis)
5. Examples
   a. Standardized Course Evaluations: not necessarily every course every academic semester or quarter by every student
      (1) Every academic semester/quarter or every year for new courses, revised courses, or new course instructors until course and instructors become established (in approximately 3 years)
      (2) Every 1 to 3 years for established courses with established instructors
   b. Non-standardized Course Evaluations: when needed or routinely as above
6. 
B. One-On-One Interviews
1. Interview of one student, alumnus, employer, faculty or staff member by a ‘trained’ interviewer who follows a relatively consistent set of questions for each interview.
2. Uses: examples
   a. Graduation
   b. Students exiting the program prior to graduation
   c. Employers of graduates or students
3. Issues
   a. Use a survey instrument to guide the interview
   b. Train the interviewer to be objective, ask questions in a non-leading manner
   c. Very labor intensive
4. Data types
   a. Similar to Surveys (above)
   b. Specific quotes
5. Examples

C. Focus Groups
1. A ‘trained’ moderator or facilitator guides a group of (usually) 5 to 10 individuals with similar backgrounds in the discussion of a predetermined set of questions and issues. This is usually a one-time meeting for each group with time limits of 30 to 120 minutes.
2. Used for groups of students, graduating seniors, alumni, faculty, staff, employers, other health care professionals, patients, etc.
3. Issues
   a. A survey instrument or set of guidelines is used to lead the group.
   b. Train the interviewer to be objective, ask questions in a non-leading manner, handle the over-bearing and the quiet participant, directing the group toward consensus (if a goal of the session).
   c. Labor intensive
4. Data types
   a. Summaries and/or transcripts
   b. Specific quotes
   c. Consensus statements
5. Examples

D. Advisory Groups
1. A group of individuals with similar or dissimilar backgrounds that generally meet routinely to discuss issues put forth by an administrator, program director, or committee chair. The Advisory Group is chosen to be representative of the groups from which they came.
2. Used for groups of students, graduating seniors, alumni, faculty, staff, employers, other health care professionals, patients, etc.
3. Issues
   a. Assurance that Advisory Group members are representative of their peers
   b. Direction and focus of the discussion
   c. Providing needed background on the issues to be discussion
   d. Providing follow-up and feedback on previous meetings
4. Data types
   a. Summaries and/or transcripts
   b. Specific quotes
   c. Consensus statements
5. Examples
   a. An Advisory Group of students in the second professional year met after each of the six examinations in the pharmacology course sequence over two semesters to discuss course lectures, readings, discussion sessions, and the examination. The sessions were run by the pharmacology course coordinators.
   b. A Dean’s Advisory Group was made up of a physician, nurse, two alumni, one
student, one full-time faculty member, two adjunct faculty (one from institutional and one from community practice), and one representative from the pharmaceutical industry. This group met once to twice yearly to discuss issues put forth by the Dean including: perceived strengths and weaknesses of the program and its graduates.

E. Class Meetings
1. Meetings with an entire class of students that are in a certain year or phase of their academic program to discuss issues that are pre-determined and those that arise at the meeting. The meetings are usually facilitated by an academic administrator, class advisor or other faculty or staff member and/or a student leader. These meetings can be occur routinely or on an as needed basis. These meetings can also be used to develop student’s skills and knowledge.

2. Uses
   a. Problems or difficulties in current and previous courses.
   b. Current status

3. Issues
   a. Focus on the positive and on solutions, as well as on problems and complaints.
   b. Both sides should be reminded to listen well, be fair and objective, and communicate reasons for concerns, comments and decisions.

4. Data
   a. Consensus statements
   b. Votes on issues
   c. Current status: study habits, internship site and satisfaction, pursing residency, etc.

5. Example: Class meetings were set up to occur 2 times per semester in the third professional year. Predetermined topics for the meetings, in the order of the 4 meetings, included:
   a. adjustment to the third professional year including difficulties, workload;
   b. informal assessment of the pharmacotherapeutics course sequence;
   c. introduction to clerkship and estimation of which electives will be chosen;
   d. introduction and interest in residencies and fellowships, overview of and assessment of abilities in interviewing and resume writing.

F. Embedded Assessment: Pre-Course Assessment
1. At the beginning of a course or section of material, students are assessed on their current knowledge, skills, abilities and/or attitudes. This can be performed utilizing a number of techniques including examinations, competency evaluations, objective structured clinical examinations (OSCEs), etc. These evaluations provide useful assessment data, but they also provide information on the students’ mastery of prerequisite material and direction in the design and delivery of the course or section of material to be taught/learned.

2. Uses

3. Issues
   a. Expertise
   b. Resource needs and associated costs

4. Types of Data

5. Examples
   a. The first meeting of the therapeutics laboratory course involves the assessment of students’ abilities to perform blood pressure, heart rate measurement, drug counseling, and evaluation of a drug interaction using appropriate references. The student’s knowledge of drug class, action, and major adverse effects of select prototype or common drugs is assessed.

   b. During the first week in the clinical pharmacokinetics course, an assessment is performed of students’ abilities to define common pharmacokinetic terms (half-life, clearance, volume of distribution, etc.), use semi-log graph paper, and solve relatively simple pharmacokinetics problems (i.e. determine the half-life of a
drug when given plasma concentration and time data, recommend a new dose when changing the route of administration of a drug). This assessment is repeated at the end of the clinical pharmacokinetics course.

G. Embedded Assessment: Course Exercise or Experience
1. Data from didactic, laboratory, small group, or experiential activities or course work (exercises or experiences) can be used to provide program assessment data.
2. Uses: knowledge, skill, attitude/behavior assessment
3. Issues
   a. Is a relatively efficient method to collect direct measurement of an ability.
4. Types of Data: specific general ability or program-specific ability
5. Examples
   a. A homework assignment included the use of data retrieval from computer databases and the internet, which were competencies from previous courses. The student’s abilities were assessed.
   b. A laboratory exercise instructed the student to compound an intravenous or topical product. The pharmacuetical calculations were assessed.
   c. During an experiential course, students are required to prepare drug information consults. These were evaluated and assessed based on depth of literature search and writing/composition skills.

H. Embedded Assessment: Course Examinations and Evaluations
1. The assessment of knowledge, skill or attitude is inserted (embedded) into a routine course or curricular examination or evaluation of a student’s ability.
2. Uses: in a variety of settings
3. Issues
   a. Students generally put forth their best effort.
   b. Topic assessed must be selected carefully based on importance and appropriateness.
   c. Relatively efficient, depending upon how it is embedded.
4. Data types
   a. Skill competencies
   b. Knowledge
   c. Abilities
5. Examples
   a. Students’ writing skills were embedded into an examination or exercise that is focused on content. Their course grade would be determined by the content and assessment data would be collected from an evaluation of their writing skills.
   b. A quiz in a pharmacotherapeutics course included extra credit for answering multiple choice questions on prerequisite knowledge regarding laboratory tests. Students received a grade on the quiz and provided an assessment of their mastery of the prerequisite knowledge.
   c. Correlation tests are used to determine the association of students’ grades in biopharmaceutics with their first and examination grades and their overall final grades in clinical pharmacokinetics.
   d. The evaluation form for the Advanced Pharmacy Practice Experiences includes items evaluating a student’s abilities in communication with patients and with other health care professionals. A random sample of two forms for each student were selected and the grades for each of these communications abilities is collected. The mean, median, standard deviation and range are used as assessment data.

I. Capstone Course or Experience
1. A capstone course or experience provides an opportunity for students to demonstrate their ability to utilize a number of high level, major abilities to complete the required activities.
These courses, experiences or requirements occur near the end of the academic program and are used to assess and document the student’s abilities.

2. Uses: assessment of the major abilities developed in an academic program
3. Issues
   a. These data may be more qualitative.
4. Data types: skills, knowledge, abilities
5. Examples
   a. Students are required to complete and present a research project or experiment during their final year in the program.
   b. Students are required to take an education rotation as one of their Advanced Pharmacy Practice Experience. During that education rotation, they are required to participate as a teaching assistant in the pharmacotherapeutics laboratory and recitation sessions, prepare and deliver one exercise or mini-lecture to students, and prepare and present a seminar on a controversy in therapeutics.
   c. Students are required to write a paper on a specific therapeutic or practice topic.

J. Student Portfolios
1. Students are required to create a portfolio with specific elements that catalogs their progression through the program and documents their abilities. Their portfolio is reviewed at scheduled periods throughout the program.
2. Uses: assessment of progression in a variety of areas
3. Issues
   a. Labor intensive
   b. Shows range of what students have done
   c. May provide examples of only the best work of the student
   d. May be very useful when applying for jobs
   e. May benefit some students more than others
4. Data types: skills, knowledge, abilities
5. Examples of components of the student portfolios
   a. Philosophy of Practice
   b. Academic Transcripts
   c. Certificates of merit, competency, etc.
   d. Samples of practice (care plans, lesson plans, etc.)
   e. Samples of evaluations
   f. In-Services, Seminars, Research
   g. Demonstration of meeting Professional Abilities and Generic Abilities
   h. Resume or Curriculum Vitae
   i. Personal Development
   j. Self Assessment

K. Special Assessment Sessions Outside of Class
1. A special time period is set aside for program assessment, when a number of assessment instruments (knowledge examinations, skills assessments, surveys) are administered. This may encompass one to four hours or even one to five days. Student participation may be voluntary or required.
2. Uses: many
3. Issues
   a. Must also be of value to the student by providing feedback to the student on areas of strength and those in need of development.
   b. May be resource intensive, but must be efficient.
   c. Is the time away from class justified?
   d. Validity must be determined if not all students are involved.
4. Data types: numerous
5. Examples: surveys, competency/comprehensive/high stakes exams, etc.

L. Comprehensive or High Stakes Evaluations/Assessments
1. Students undergo a comprehensive assessment or evaluation at specific, crucial points during their academic program. The timing of these assessments coincides with completion of major components of the program such at prior to and at the end of the Advanced Pharmacy Practice Experiences. These assessments may be for student and program assessment and improvement only or may be a component of a mandatory “high risk” evaluation where students must demonstrate a certain level of knowledge and/or skill before progressing to the next stage in the academic program.

2. Uses: skills and abilities

3. Issues
   a. Resource intensive
   b. May need specialized resources (actors to play simulated patients, etc.)
   c. Should provide feedback to the students on strengths and areas in need of development
   d. Can be intimidating to students, which may affect performance

4. Data types: numerous

5. Examples
   a. Objective Standardized Clinical Examinations (OSCEs)
      (1) A number of predetermined stations with simulated patients and problems where students rotate from one station to the next, fulfilling the required tasks.
   b. Competency Assessments
   c. Practical Examinations

M. Self Assessment with Review by Faculty
1. A set of general skills, behaviors and attitudes are self-assessed by a student and then reviewed by the student’s advisor or other faculty member at scheduled intervals during the academic program. The student must demonstrate appropriate documentation and an acceptable level in each of the abilities. Successful portfolio review may be required in order to continue to progress in the academic program or these may be used solely for student growth and development and program assessment.

2. Uses
   a. Useful in providing students with feedback on their abilities.
   b. Provides validated longitudinal data on the development of general (or other) abilities.

3. Issues: may be time consuming, at first

4. Data types: general abilities

5. Examples of items assessed (from the CAPE Educational Outcomes and from a Physical Therapy program)
   a. Thinking skills (critical thinking, problem solving)
   b. Communication skills
   c. Valuing and ethical behavior
   d. Social interaction and interpersonal skills
   e. Social context
   f. Social responsibility
   g. Self learning and commitment to learning
   h. Professionalism
   i. Time and resource utilization
   j. Use of constructive feedback
   k. Stress management
   l. Group interaction: membership, leadership

N. Self-Assessment Surveys: Abilities
1. Students and/or graduates complete a survey on their perceived level of competence or comfort with specific abilities.

2. Uses
   a. Progression of the development of meeting the competency at various levels of
the Pharm.D. program
b. Determination of the degree of meeting the competency by the graduates and the development after graduation.

3. Issues
a. The data may not validated, but should be relatively reliable from class to class.

4. Data types: abilities

5. Examples
a. Students and graduates at various levels in the program or after graduation completed the same survey year after year on a voluntary basis. The survey included the NAPLEX competencies from NABP.

O. Course Evaluation and Review
1. Course evaluation and review can involve a number of techniques to assess what the course is able to accomplish, generally and specifically, and how it can be improved.
2. Uses: individual course revision and possibly curricular revision.
3. Examples
a. Standardized course evaluation forms (surveys) filled out by students at the end of the course.
b. Standardized formative course evaluations performed during a course.
c. Course-specific evaluation forms (surveys) filled out by students during a course and/or at the end of the course.
d. Review of course syllabi, handouts and other materials by a group or committee (course coordinators, curriculum committee, etc.) prior to, during and/or following the delivery of a course.
e. Focus groups or advisory groups of students provide feedback on general and specific aspects of the course during, at the end, and/or following a course.

P. Preceptors and Employers Perceptions
1. Perceptions and impressions of the strengths, weaknesses, and general characteristics of students and/or graduates that have been interviewed and/or hired can be collected from preceptors and employers using surveys, interviews, or focus groups.
2. Uses: global curricular assessment
3. Issues
a. Data may be from interaction with only a small number of students.
b. Alumni may demonstrate some bias.
4. Data Types: global and specific abilities
5. Examples
a. Focus groups of preceptors and employers.
b. Surveys of perceutors, employers, and alumni

Q. Alternative Assessments or Criterion-Referenced Assessment [14]
1. Constructed response items, essays, writing samples, oral discourse, exhibitions or experiments can be used to assess student development at various stages in the program. Criteria are developed to assess the level of performance in each of these activities. Similar or may include embedded course activities, capstone courses or experiences, embedded course evaluation, etc. (see above).
2. Uses: abilities assessment
3. Issues: depend upon the method used
4. Data Types: variable
5. Examples: examinations, essays, presentations, exercises, etc.

R. Annual Departmental, Program, College, University Reports
6. Annual reports provide information on the previous, current and future direction of the administration, department, program, school, college, or university.
7. Uses: identification of what to assess, many others
8. Issues
a. May or may not be based on data.
b. Very dependent upon the style of the report.

9. Data Types: variable
10. Examples: annual reports for all levels of the academic community

S. Periodic Program Review
1. A self-study (for accreditation) or periodic program review should be done every 4 to 7 years, generally every 6 years. This self-study or program review looks at the organization, purpose, performance, resources, and other important components of the program.
2. Uses: assessment of program as a whole and its individual and support components.
3. Issues: fairly extensive, but detail may be lost
4. Data Types: variable, many

T. Faculty Teaching Portfolios
1. Teaching portfolios commonly include the collection of a faculty member’s goals, philosophy, examples of course design and delivery, peer and student assessment, supervisor evaluation and assessment, and commentary.
2. Uses
   a. Provides a view of the development of teaching, course and curricular design and delivery over time from the viewpoint of the faculty.
3. Issues
   a. May provide only the good work from a faculty member.
4. Data types: mostly qualitative, some quantitative
X. Review, Analyses, and Dissemination of Assessment Data

Global and program/department specific assessment data should be made available for university-wide and college-wide use, but this must be done in an organized approach with appropriate checks and balances. Data, analyses and reports should be submitted in an electronic format, using university supported software programs (spreadsheets for data and e-mail or word processing programs for reports). A model for data review, analysis and dissemination is described below.

A. Data Collection
1. A determination of which data are to be collected should be made based on input from those responsible, including (but not limited to): program/department director, course coordinator(s), faculty, curriculum committee, dean, assessment committee, assessment officer, and faculty.
2. Data collection methods and instruments will be created, reviewed and implemented under the direction of the appropriate individual or group.

B. Data Tabulation and Storage
1. The raw data should be stored electronically and in original form when possible.
2. Data should be stored in a form useful for future longitudinal analyses.
3. Support personnel should be used to store the data and retrieve data.

C. Data Review, Summary and Analysis
1. The individual or group responsible for collecting the data should also be responsible for reviewing the data, determining the validity and accuracy of the data, creating a model for data summary and analysis, and preparing the presentation of the data.
2. Support and/or expert personnel should be used when possible in the creation of the data analysis and tabulation.

D. Presentation of Data
1. The data summaries, analyses, and, if needed, raw data should be presented to faculty and other participants in that program/department, including other faculty, staff, and administrators by those responsible for the data (see above).
2. These data presentations will serve to inform participants of the data, but also to gather input on the interpretation and utilization of the data.

E. Report of Data
1. Report creation
   a. Use input from the initial data presentation(s).
   b. Focus on important assessment elements.
   c. Include data summary, analysis, interpretation, recommendations and proposed utilization.
   d. Clear format and presentation of data.
   e. Created by those responsible for the data (see above) or possibly by the assessment officer, committee, program/department director and/or other designated individual or group.
2. Report Dissemination: The report should then be sent to the assessment committee, faculty, dean, program/department director, curriculum committee, institution-wide assessment officer, and other select individuals or groups for review, editing, acceptance and approval. This may be a single or multiple step process.
3. After acceptance/approval of the final report by the faculty, dean and/or assessment director and/or committee, it will be incorporated into the annual report by the assessment committee, assessment officer, dean, program/department director, or other designate.

F. Report of Data Utilization
1. Utilization of assessment data should also be collected from the curriculum committee, program/department director, dean and assistant/associate dean(s), faculty, directors of
major courses curricular components, and others involved in the design, implementation and delivery of the curriculum and courses.

2. These data should then be incorporated into the annual report.

G. Dissemination of Data to School/College
1. The annual report should be disseminated to the college or school by the dean, assessment officer, or assessment committee.
2. The reports should be disseminated in full form to the curriculum committee and all full-time faculty and administrators of the college or school.
3. Summaries of the annual report and/or pertinent components of the annual report should be disseminated to students, alumni, and adjunct faculty.
4. Raw data sets should be made available to decision makers upon request.

H. Dissemination of Data to University and Beyond
1. The annual report should be disseminated to the university-wide assessment committee and officer(s) and chief academic affairs officer (vice president, provost, etc.).
2. Summaries of the annual report and/or pertinent components of the annual report should be disseminated to and/or available to the university-wide community. Posting the report summary or pertinent data on a website should be considered.
3. These reports and data should be available for external accreditation and internal program review.
4. Manuscripts should be written and submitted to refereed professional and educational journals reflecting the college’s assessment methods and data. Abstracts should also be written and submitted to educational meetings.
XI. Utilization of Assessment Data

Program assessment data can be used for a variety of purposes, but most importantly for the improvement in the outcomes of the academic program and related activities. Data must be used appropriately given its intended purpose, strengths and limitations. If data are not used, the collection of those data should be re-evaluated. This section includes a list of potential uses of these data.

A. Student Recruitment, Selection and Retention Uses
1. Enhance the applicant pool in quality and number.
2. Determine what characteristics are associated with a high success rate
3. Changes in remediation or reassessment methods

B. Academic Program Uses
Determine the need for:
1. Major or minor curricular revision;
   Consider changes in:
   a. The mission and goals of the curriculum;
   b. Curricular objectives;
   c. Delivery of the curriculum;
   d. Course sequencing;
   e. Types of courses (additions and/or deletions);
2. Major or minor course or course series revision
   a. Course delivery changes;
   b. Lecture or lesson changes, additions, deletions;
   c. Changes in student assessment methods
3. Enhancement or addition of other learning opportunities
   a. Internship
   b. Service learning and other community service projects
   c. Outside lecturers
   d. Self improvement workshops

C. Student Life/Activities Uses
1. Major or minor changes in advising
2. Course and/or exam scheduling changes
3. Student organization (professional organizations, fraternities and sororities, etc.) support, organization, recognition, etc.
4. Need for personal developmental skills: time management, stress management, professional mentoring, etc.

D. Resource Allocation Uses
Consider these likely applications of assessment data when allocating resources:
1. Increase allocation of resources to those programs or components of programs that are most successful.
2. Increase allocation of resources to those programs or components of programs that are in the most need of improvement.

E. Source of Data for Accreditation Self-Studies

F. Considerations for the Analysis and Use of Data
1. Trust the data until proven otherwise.
2. Some of these data may appear to be ‘soft’, but they are still very useful. Trends can be verified by collecting data on the same variable from 2 or more independent sources.
3. Collection of assessment data is not a highly controlled experimental setting, but hopefully reflects effective methods of assessing student learning.
4. Be cautious in extrapolating data beyond a reasonable boundary.
5. Recognize the limitations of the data based on the methods used to collect it, the number
of respondents or data points, and the timing of the assessment.

6. Look at trends over time.
7. Use data from a number of different sources.
8. Use the data to determine what to assess next.
9. Use the data to assess recent changes in the program, courses, expectations, etc.
10. Make major curricular, course, or service changes only after confirmation of data.
11. Make minor curricular, course, or service changes based on reasonably good data.
XVII. References

11. Astin AW; Banta TW; Cross KP; El-Khawas E; Ewell PT; Hutchings P; Marchese TJ; McIlveney KM; Mentkowski M; Miller MA; Moran ET; Wright BD. 9 principles of good practice for assessing student learning. AAHE Assessment Forum, July 25, 1996. http://www.aahe.org/principles.htm