

AABInternational

EVIDENCE GUIDE

**A GUIDE TO USING EVIDENCE IN THE ACCREDITATION PROCESS:
A RESOURCE TO SUPPORT AVIATION PROGRAMS,
AVIATION DEPARTMENTS AND VISITING TEAMS**

FORM 208

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1.0 Purpose

The purpose of this Evidence Guide is to help aviation departments learn how to assemble and use evidence in all stages of the AABI accreditation process. We hope these concepts may stimulate new thinking about how to organize institutional information resources and use them for decision-making.

This Guide is intended to support aviation programs, provide examples of good practices, and raise questions that might stimulate better understanding of how AABI intends for evidence to be developed and used in the accreditation process. It is not intended to be applied mechanically or to be viewed as a “one size fits all” set of standards or criteria.

We wish to acknowledge the good work of the Western Association of Schools and Colleges (WASC) and other CHEA members who were so gracious in their offer to help AABI transition to an outcomes-based accrediting body and from whom much of the information in this Guide was either derived or borrowed verbatim.

2.0 Introduction

AABI’s belief in the central importance of evidence in the accreditation process is founded on two core values and criteria:

- Core Value 1. Responsible membership in AABI is based on the conviction that the results of any aviation program of study must be verifiable. All academic disciplines have established canons of evidence, which they use to assess the adequacy of their scholarly products. More importantly, all members of the aviation educational community accept the proposition that it is not proper to assert conclusions without recourse to evidence.
- Core Value 2. Accreditation must constitute more than a periodic event and must lead to significant levels of ongoing program improvement. The process of accreditation, moreover, should result in more than an external validation of "quality;" it should "add value" to an institution by providing an important opportunity to inquire deeply into student learning - a matter related directly to the mission of every aviation program.
- Criterion 2.3.2, Assessment (from AABI Form 101). *Each program MUST have an assessment process that includes a written plan with documented results. The assessment process MUST demonstrate that the program outcomes are being measured and that the program objectives are being met. Evidence MUST be given that the results are applied to the further development and improvement of the program. Evidence that may be used includes, but is not limited to, the following: student portfolios, including graded assignments and/or projects; nationally normed subject content examinations; alumni surveys that document professional accomplishments and career development activities; placement data of graduates; and employer surveys.*

3.0 Evidence Defined

What is evidence? At the most fundamental level, evidence is the substance of what is advanced to support a claim that something is true. This makes evidence different from information, or data, or facts in at least five subtle but important ways:

3.1 Intentional and Purposeful: Evidence is intentional and purposeful; it is produced to address deliberately posed questions that are important to both aviation programs and their stakeholders.

3.2 Interpretation and Reflection: Evidence entails interpretation and reflection; it does not speak for itself. This means that sound evidence involves more than simply presenting a body of data or listing the facts. Instead, it implies that one has thought about what it means and can interpret it appropriately to support a conclusion.

3.3 Integrated: Good evidence is integrated; it does not consist merely of a list of unrelated facts. Individual pieces of data are not advanced as evidence on their own. Rather, they take on meaning in the overall context in which they are presented. This means that individual pieces of evidence should mutually reinforce one another, based on the fact that information of quite different kinds, drawn from diverse sources, point in a similar direction.

3.4 Quantitative and Qualitative: Evidence can be both quantitative and qualitative; it is not just confined to numbers. Appropriate quantitative data will be powerful and it is expected that much of the information an institution advances in support of its claims will be in numeric form. But it is important for institutions to avoid automatic assumptions that measurement is what is wanted. Narrowly confining the body of evidence submitted to things like disembodied test scores or facilities inventories are precisely the opposite of what AABI seeks from institutions about its aviation programs.

3.5 Direct or Indirect: Good evidence can be either direct or indirect; it does not always require obtrusive data gathering that uses specially designed instruments. Rather, the process should "rely heavily on existing institutional/program evidence and sampling of institutional/program exhibits and processes. While there may be several occasions on which new data will need to be collected, institutions should be certain that they have tapped the wealth of information that is already available.

4.0 Evidence for the Purpose of Accreditation

In addition to the five properties of evidence, which apply to all forms of evidence, some specific points need to be made about evidence when it is used for purposes of accreditation. One point concerns what evidence ought to be about. In self-studies, institutions have traditionally used data largely to describe who they are. These data typically include such aspects as enrollment counts, program inventories, faculty numbers and credentials, numbers of volumes in the library, financial resources and space inventories. While these data are useful and necessary in future accreditation reviews—both

to orient visiting team members to the institution and to provide some indicators of capacity—the kinds of evidence advanced in the outcomes accreditation process ought instead to concentrate largely on what each program does and how well it does relative to its goals and standards of performance.

4.1 Students: In the case of students the information presented should go beyond how many there are and focus on how retention/graduation rates vary for different types of students and how both aggregated and disaggregated results match program expectations and goals. Institutions should cite more than just a list of assessment activities and selected performance results, such as licensure pass rates. They should also identify areas where key program learning objectives and performance standards are being achieved or where improvement is needed.

4.2 Student Learning: In the case of assessment of student learning, four principles of evidence have proved applicable across a wide range of settings and methods:

4.2.1 Knowledge and Skills: Evidence should cover knowledge and skills taught throughout the program's curriculum. Evidence offered in support of student learning in the accreditation process should not be limited to that of a single course or sub-field of the discipline (unless the course used as a setting for assessment is designed as an integrative capstone whose coverage is itself comprehensive). The unit of analysis for evaluation for the student is the cumulative experience and level of learning of the student at the time of graduation from the aviation program. The cumulative effect and learning results that are generated for students in an ongoing way at the completion of the program is to be evaluated. At the Aviation Department level, correlation of student learning to Department goals should be done in ways beyond using a specific course relevant to the ability area or domain of knowledge.

4.2.2 Multiple Judgments: Evidence should involve multiple judgments of student performance. Parallel to the need for more than single courses to be used in making judgments of student performance—individually and collectively—is the need for more than one person to evaluate evidence of student learning. Many techniques are available for engaging multiple reviews and reviewers, such as portfolio analyses, broad reviews of student work products, and follow-up studies. Data should be submitted for broad faculty discussion and action to make recommended adjustments that will improve student-learning results.

4.2.3 Multiple Dimensions: Evidence should provide information on multiple dimensions of student performance. This principle suggests that assessment results in more than a single summative judgment of adequacy. Information should instead be collected on a number of discrete

dimensions of performance, and should be aggregated across students to provide evidence of the overall strengths and weaknesses of graduates in a program. A single grade or certification of mastery is thus insufficient to meet this principle.

4.2.4 More Than Surveys: Evidence should involve more than surveys or self-reports of competence and growth by students. One of the first steps many programs undertake when they begin assessment is to survey students about satisfaction and perceived growth and development. Surveys asking students to rate their own strengths and weaknesses and/or areas of growth, though helpful, are inadequate as stand-alone assessments of outcomes. More and different types of evidence are expected in addressing student learning, including reviews of direct student learning products and the gathering and evaluation of actual student learning results.

4.2 Faculty: In the case of faculty, in addition to their credentials, emphasis should be placed on the effectiveness of the support that the institution provides in developing scholarship of teaching or in moving toward more learning-centered institutional approaches. In addition, the involvement of faculty in aviation industry related activities and associated professional development is essential.

4.3 Finances and Facilities: In the case of finances and facilities, the object of interest should be not just their extent or sufficiency but also how effectively they are used to support teaching and learning.

5.0 Things to Avoid

When using evidence, institutions also need to avoid a number of negative syndromes that have frequently been encountered in other settings. Put simply, these include:

5.1 Trying to measure everything: The best evidence is selective, with the selection process guided deliberately by institutional priorities and strategic themes. But in an evaluative situation like accreditation, it is easy to be misled into thinking that, when it comes to information, more is better. AABI encourages program chairs to think carefully about the evidence they present and to ensure that it is relevant and of high quality. A structured and well-explained presentation, anchored on a succinct body of well-documented and reflected-upon evidence, is more convincing than simply a data dump.

5.2 Trying to be too precise: The best evidence is most effective within the context in which it is advanced and should be credible, valid and accurate. However, good evidence does not always have to be as precise as methodologically possible. Rather, it should be as precise as necessary, given the problem at hand, or the question to be answered. In presenting evidence, moreover, it is often useful to build in multiple sources rather than to invest everything in a single source or method. It is frequently important to take risks in gathering information. It is

more important to be approximately correct about the right things than precise about things that are peripheral.

5.3 Closed circle thinking: Reflecting on evidence is a process that is never really completed, the circle is never closed but metaphorically is a continuous upward spiral. As a result, institutions and their programs need not always draw summary conclusions from the evidence they present to AABI as part of the accreditation process. Sometimes, reviewing evidence does provide answers and suggests particular actions that might be taken. Certainly AABI encourages program chairs to act on evidence wherever possible. However, reflection sometimes yields more precise questions and suggests new lines of investigation that might be undertaken. This, too, is a positive outcome. In fact, the iterative nature of the process of collecting evidence about performance and of raising questions for further inquiry is one of the hallmarks of the outcomes process. In sum, evidence is a robust but malleable concept that should not be construed too narrowly. Rigorous canons of good evidence can be clearly stated and applied. However, it is important from the outset for program chairs and faculty to think creatively about evidence and to leave the door open to forms of demonstration that go beyond statistics and compliance.

6.0 Characteristics of Good Evidence.

Because evidence is always advanced in support of a specific question, it is important to make clear the properties of evidence that are most compelling in the accreditation process. Five principles of evidence communicate this intent; like any principles, they are intended to provide general guidance and should therefore be applied creatively and flexibly. Clearly, several of them involve making hard choices about matters such as the level of detail to be provided, how much reflective commentary to include, and how much documentation is sufficient. In the information that follows, each principle is stated and illustrated with examples and commentary.

6.1 Relevant. Any evidence advanced should be related to the question being addressed. While this principle may seem obvious, it is frequently violated in practice. In fact, institutions sometimes produce reams of statistics in the course of an evaluation that are only marginally related to the questions they are trying to answer. This principle implies the well-known measurement property of validity—the extent to which the advanced evidence is capable of fully and faithfully representing the underlying concept of interest. Equally implied is the need to explain coherently exactly what any advanced information is supposed to be evidence of, and why it was chosen over other potential sources of information. In practical terms, this means that programs need to select carefully the kinds of evidence they advance, in the light of specific AABI Criteria or questions of importance to the departments themselves. It means programs not only should present the evidence, but also should set forth a clear rationale for why they think it is relevant to the intent of the Criteria or question.

Example 1: In relation to Criterion 2.2, Program Educational

Objectives, Institution X provides a set of institutional planning guidelines stating that academic departments should establish educational objectives.

Commentary on Example 1: While such guidelines may be useful, simply citing the existence of this guideline or the fact that the aviation department has now established educational goals and objectives says little about the extent to which departments and faculty are aware of the educational objectives that have been established or actually apply them when they evaluate student work. Relevant evidence that speaks to this point might include actual samples of departmental learning objectives that reflect specific departmental educational objectives, results of faculty/staff surveys that indicate awareness of such objectives, or results of a syllabus study that suggest broad awareness of them among teaching faculty. Even better evidence might be a systematic self-audit in which a department's faculty examines their objectives to determine the extent to which they have intentionally incorporated these objectives in the ways they teach their courses, and have explicitly designed assignments that require students to demonstrate mastery of these objectives.

Example 2: In relation to AABI Criterion 2.2, the aviation department at University X provides catalog copy indicating the specific course and credit requirements needed to earn a degree.

Commentary on Example 2: The primary intent of the criterion is for the aviation department to be able to demonstrate that its graduates have met established and recognized standards for achievement, not that they have completed the curriculum as described. Relevant evidence that speaks to this point might include the following: assessed results of student writing samples that show graduates have reached the levels of writing expected by faculty, curricular features such as capstone courses or presentations that require students to demonstrate what they have learned in various courses, examples of common grading criteria in particular fields or departments, or benchmark comparisons with other institutions that indicate comparable curricular features or levels of student attainment.

Example 3: In relation to AABI Criteria 2.2: "*The aviation program MUST have a mission statement that reflects an educational philosophy, goals, purposes, and general intent, and clearly complements the institutional mission.*" In response to this, the aviation department at University X provides their mission statement.

Commentary on Example 3: Although it is important for the aviation department to submit their mission statement, the primary intent of the criterion is for the aviation department to provide *evidence* that the program is complying with the published mission statement.

Example 4: In relation to mission statement requirement outlined in AABI Criteria 2.2: *"The administration of the institution MUST enable the aviation program to carry out fully its unique responsibilities as defined by its stated mission."* In response to this, the aviation department at University X provides a letter from the administration stating that the administration is extremely supportive of the aviation program.

Commentary on Example 4: Although it is important for the aviation department to provide letters of support, far more convincing data would be a comparison of faculty salaries within the aviation department to salaries of faculty in another department within the same college (e.g. Basic and Applied Sciences). Another source of administrative support evidence could be provided in the form of a budget comparison of the aviation department to another department in the same college (e.g. Chemistry).

Example 5: University X provides data that indicate that 100 percent of their students enrolled in the honors program have gone on to successful careers in aviation.

Commentary on Example 5: Although it is important for the aviation department to provide this evidence, if only three percent of their students graduate with an honors degree, the above sample is not really relevant to their overall program.

Example 6: In relation to AABI Criteria 2.3.1: *"Aviation programs MUST demonstrate that graduates have (each category 'a through j') specific goals pertaining to the AABI Criteria."* For example, part "h" states that graduates have *"an ability to use techniques, skills, and modern technology necessary for professional practice."* In response to this, the aviation program at University X provides the results of a exit exam survey that indicates that 95 percent of their students responded "yes" to the question: "Do you believe that University X prepared you for your professional career?"

Commentary on Example 6: Although the evidence presented above would provide valuable information on students' perceptions of their aviation department, it does not satisfy the AABI concept of "reliability in measurement." It is very difficult for a recent graduate to accurately comment on his/her preparation for their professional career. A more reliable assessment would be results from a survey sent to alumni currently working in their respective areas asking them about how University X prepared them for their professional careers

6.2 Verifiable. The validity of any evidence advanced must be verifiable. This is partly a matter of whether the process of assembling the evidence is replicable, and if repeating the process would yield a similar result. This corresponds directly to the concept of reliability in measurement. Verifiability, however, is also a matter of documentation - whether sufficient information is available to enable a reviewer (or any third party) to independently corroborate what was found. Because these concepts constitute fundamental principles of scholarship, they should already be familiar to the department faculty.

Example 1: In relation to Criterion 2.3.2, the aviation department at Institution Y states that employers often express satisfaction with the match between abilities of the institution's graduates and their own needs.

Commentary on Example 1: The evidence presented could be strengthened in two ways, both involving the simple reporting of additional details. First, specific numbers and percentages could be cited in support of this conclusion, suggesting systematic attention to the question posed. Second, the particular methods used to collect such information, such as surveys or focus group interviews, could be described and be made available to a visiting team for inspection.

Example 2: In relation to Criterion 3.1, the aviation department at Institution Z presents a description of the institution's (or department's) advising policies, together with results of a recent survey of aviation students by the Institutional Research Office that show an overall 87/0 satisfaction rate with advising. The department also presents the results of a random audit of 25 student records that show its advising policies are actually being carried out.

Commentary on Example 2: The team on site through its own audit procedure could easily replicate the second of these two evidence-gathering approaches, and documentation for both could be made readily available for further inspection or analysis. The evidence presented is, in principle, highly verifiable even if no further investigations are undertaken to determine its veracity.

Example 3: In relation to AABI criteria 2.2: "*The aviation program MUST have a mission statement that reflects an educational philosophy, goals, purposes, and general intent, and clearly complements the institutional mission.*" In response to this, the aviation department at University X provides their mission statement.

Commentary on Example 3: Although it is important for the aviation department to submit their mission statement, the primary intent of the criterion is for the aviation department to provide verifiable evidence that the program is complying with the published mission statement.

Example 4: In relation to mission statement requirement outlined in AABI Criteria 2.2: “*The administration of the institution MUST enable the aviation program to carry out fully its unique responsibilities as defined by its stated mission.*” In response to this, the aviation department at University X provides a letter from the administration stating that the administration is extremely supportive of the aviation program.

Commentary on Example 4: Again, although it is important for the aviation department to provide letters of support, far more verifiable data would be a comparison of faculty salaries within the aviation department to salaries of faculty in another department within the same college (e.g. Basic and Applied Sciences). Another source of administrative support of verifiable evidence that could be provided would be in the form of a budget comparison of the aviation department to another department in the same college (e.g. Chemistry).

Example 5: In relation to AABI Criteria 2.5.5, “*The aviation program MUST provide for an adequate number and quality of support staff.*” In response to this University X provides a list of their support staff.

Commentary on Example 5: Although a critical piece of information, a more effective approach would be to provide results from students and faculty that indicate their satisfaction with the current support staff. This type of information would provide an avenue for the visiting team to easily verify the survey information by asking students and faculty their opinions about the support staff.

Example 6: In relation to AABI Criterion 2.3.1 and 3.3.1 “*Aviation programs MUST demonstrate that graduates have an ability to apply knowledge of mathematics, science, and applied sciences.*” In response to this the aviation program at University X provides a list of three mathematics classes that aviation students are required to complete.

Commentary on Example 6: Although this provides important information, it will be very difficult for a visiting team to verify from a list of required classes whether “*...graduates have an ability to apply knowledge of mathematics, science, and applied sciences.*” A description of classes in the core where mathematical principles are used and surveys that asks students to

list classes in the core that use mathematical principles could easily be verified by a visiting team

6.3 Representative: Any evidence offered must be typical of an underlying situation or condition, not an isolated case. If statistics are presented based on a sample, therefore, evidence of the degree to which the sample is representative of the overall population ought to be provided. It is usually helpful to present such statistics over time (three to five years) to check for inevitable variation and to make any underlying trends apparent. If the evidence provided is qualitative—for instance, in the form of case examples or documents—multiple instances should be given or additional data shown to indicate how typical the cases presented really are. Sampling is generally useful and desirable; sampling procedures can save considerable energy and allow for much more in-depth analysis and interpretation than would be possible when trying to collect data about all cases. But in both sampling and reporting, care must be taken to ensure that what is claimed is typical.

Example: In relation to Criterion 3.5.6, the aviation department at Institution Z describes a particular aviation professor’s project on using classroom assessment techniques to improve her instruction.

Commentary on the Example: The use of a particular case is appropriate and compelling because it can demonstrate in depth the kind of scholarship of teaching that individual faculty members are engaging in and that the institution is attempting to foster. But the evidence would be strengthened if statistics were also presented on how many faculty have participated in such programs, the distribution of participation across the department. A simple chart showing the numbers and kinds of development projects that faculty have undertaken through this program (e.g., classroom research, course portfolios) could also be effective.

6.4 Cumulative: Evidence gains credibility as additional sources or methods for generating it are employed. Conclusions also become more believable when they can be independently corroborated by quite different sources. In evaluation, using multiple methods is often termed “triangulation” and helps guard against the inevitable flaws associated with a single approach. The same principle applies to qualitative evidence whose weight is enhanced both as new cases or testimony are added and when such additions are drawn from different sources. This does not require that each and every statement advanced by an institution needs to be backed by information drawn from multiple sources, but it does suggest that the entire body of evidence should be mutually reinforcing when presented to address a particular Criterion or to address an issue or question of importance to the program.

Example 1: As part of its Assessment Process, Criterion 2.3.2, the aviation department at Institution W provides several in-depth case studies of areas that it wishes to improve. These include oral communications across the curriculum, analytical skills

development, and the integration of learning communities into first year courses. Each of these case studies involves syllabus analysis (including a look at the content and difficulty of the assignments given to students), survey results comparing faculty and student perceptions of actual classroom practices, and (for the first two cases) results of an analysis of the strengths and weaknesses of representative samples of actual student work. For oral communications, moreover, a scoring system devised by the National Communications Association is employed to examine selected student presentations, and an external reviewer at another college verifies the scoring. In the case of learning communities, information about student reenrollment and ultimate graduation rates is also supplied

Commentary on the Example 1: The evidence provided is drawn from information available to any institution. These include "hard" statistics that are drawn from existing records systems and analyzed to create appropriate indicators of performance (e.g., retention and graduation rates, syllabus analysis, and examination of actual student assignments); self-reported data on perceptions and behaviors drawn from surveys, focus groups or interviews; and direct examination of student performance using, where appropriate, recognized or externally validated assessment procedures.

Example 2: In response to Criteria 2.1, University X provides a list graduates who have been hired by the FAA as Air Traffic Controllers.

Commentary on Example 2: Although valuable, more cumulative data in the form of: scores on the national ATC test, supporting letters from the local FSDO that can comment on the "preparedness" of the students based on the "oral examination that have been administered by the FAA."

6.5. Actionable: AABI wishes to encourage aviation departments to generate (or ask the institution to generate) and evaluate quantitative and qualitative evidence such that the program is able to use this information to improve what it does. Good evidence should provide departments with specific guidance for action and improvement. This means that both the analysis and presentation of evidence must be appropriately disaggregated to reveal underlying patterns of strength and weakness, or to uncover specific opportunities for intervention and improvement. The evidence provided must also be reflectively analyzed and interpreted to reveal its specific implications for the program.

Example 1: In presenting evidence of the support it provides for student learning, the aviation department at Institution Z notes that it has established explicit targets for first-year retention rates and for

six-year program completion rates. It also provides a table indicating the actual rates attained over the past three years, which shows whether or not the established target was met.

Commentary on Example 1: Establishing targets is useful, but a basis for action would be greatly strengthened if additional analysis were undertaken to break these results down. Further exploration of these data might reveal even more opportunities for action. For example, which kinds of students seem to be dropping out and when? Can these events be associated with any particular courses or other experiences? Are there populations that appear to have exemplary rates? What might explain this? Also, how might any best practices identified in the analysis be used for further improvement?

Example 2: In relation to Criterion 2.5, the aviation department at Institution X provides statistical data on the overall composition of its faculty by discipline, age, diversity, and tenure status - together with a brief interpretive commentary that emphasizes the likelihood that upcoming faculty retirements will alter significantly its ability to staff specific areas where high future student demand is anticipated. The department also notes that, while providing a significant staffing challenge, this situation also offers an important opportunity to address its diversity goals. The department accompanies this brief commentary with a note indicating that a special institutional joint task force made up of associate deans and representatives of the Faculty Senate to help determine a coordinated recruitment strategy is currently examining these statistics.

Commentary on Example 2: The evidence provided is presented in enough detail to reveal its implications. Specific conclusions are also noted, and actions being taken in response are described. The presentation is thus informative and would provide a visiting team with appropriate guidance about how to probe further.

6.6. Examples of Evidence Relative to Specific AABI Criteria: The following examples relate directly to criteria contained in AABI Form 201, Outcomes Criteria.

Criterion 2.2 Program Educational Objectives (educational objectives), *"The aviation program for which an institution seeks accreditation or reaffirmation MUST have in place:*

"a. Published educational objectives, having sufficient detail to be measured, that are consistent with the mission of the institution and these criteria."

Example 1: The aviation department of University X lists as one of its objectives for the aviation science program: To develop, market and deliver programs that provide the aviation industry with

graduates of the highest quality. In citing evidence to support having attained this objective, the institution states that the advisory board consistently praises the graduates of the aviation program at University X.

Commentary on Example 1: While the input from an advisory board is important, a stronger case for having achieved the objective would be to include a question in an employer survey asking the employer to rate University X's graduates relative to those of other institutions. This would provide a quantitative measure of the outcome.

Example 2: The aviation department of University X lists as one of its objectives for the aviation science program: To attract, maintain and improve fiscal support for student scholarships, program resources and applied research projects. In citing evidence to support having attained this objective, the institution provides documentary evidence that scholarships for aviation science students have increased by 10% over the last five years.

Commentary on Example 2: The evidence presented is relevant to one of the objectives, increased scholarships, but does not address the other two, program resources and applied research. A complete citation would have included achievement data relative to each objective.

Criterion 2.2 Program Educational Objectives (mission statement),
"The aviation program MUST have a mission statement that reflects an educational philosophy, goals, purposes, and general intent, and that clearly compliments the institutional mission."

Example 1: In presenting evidence of the accomplishment of the Program Educational Objectives, the Department of Aviation at Institution X provides a matrix that indicates how the program objectives map to the educational philosophy, goals, purposes, and general intent of Institution X. This matrix clearly indicates the metrics by which the objectives were measured and how changes were instituted based on these measurements.

Commentary on Example 1: The Evidence in this example is a document that indicates that the mission statement has been properly prepared, approved, and published. This is similar to the evidence required for the current process and procedures.

Criterion 2.3 General Outcomes and 2.3.1 Outcomes, *"Aviation programs must demonstrate that graduates have:*

"a. An ability to apply knowledge of mathematics, science, and applied sciences."

Example 1: In presenting evidence of student learning, the aviation department at Institution X notes that it has monitored the grades of AVIA 101, Private Pilot Ground School and that the average grade achieved by students is 79.

Commentary on Example 1: Grades alone do not provide adequate evidence that the student learning objectives were achieved.

Example 2: In presenting evidence of student learning, the aviation department at Institution Z notes that it mapped the objectives of AVIA 101, Private Pilot Ground School, to the AABI outcomes. Each of these AABI outcomes was met by student exercises and projects. The location of the evidence was described.

Commentary on Example 2: This response relates to specific AABI outcomes and provides a method by which the evidence can be verified by a visiting team.

Example 3: The Department of Aviation in Institution X provides faculty meeting minutes, and/or other documents that indicate that the curriculum requirements have been deliberated and decided by the faculty.

The Department of Aviation in Institution X provides as evidence that these requirements of college level mathematics and basic sciences are met by all graduates of the program. This evidence includes the University catalog, internal advising documents, and other promotional materials. The successful accomplishment of these skills are mapped and analyzed to show that 80 percent of the students attending these courses have been successful.

Commentary on Example 3: The institution is given the charge to decide which math and science courses are required. The institution is, additionally, required to show evidence that these requirements are met.

Criterion 2.3 Program Outcomes and Assessment, "...Aviation programs *MUST demonstrate that graduates have:*

"A recognition of the need for, and an ability to, engage in, life-long learning."

Example 1: In response to Criterion 2.3, the aviation department of University X states that students recognize the need for and ability to engage in life-long learning by reporting that all graduating seniors are required to submit a five-year professional development plan as part of their senior capstone course. It provides copies of individual

plans for the team to examine.

Commentary on Example 1: Establishing a learning plan is a useful first step in responding to Criterion 2.3, but the response falls short in that there is no evidence that students are actually complying with the plans. Is there any indication that performance of students following graduation complies with the plans students made? Based on actual performance, has the department made any adjustments in their approach toward helping students to engage in life-long learning? What steps can be taken to improve performance of graduates?

Example 2: In response to Criterion 2.3, the aviation department of University Z provides a description and evidence of a follow-up telephone survey to determine whether graduates are actually pursuing professional development plans, to what extent, and their perceptions of changes to improve performance in life-long learning.

Commentary on Example 2: The evidence presented strengthens the case, but does not completely close the loop. The feedback from graduates must be reviewed and if changes are indicated, they must be made and documented in the student activity. A description of survey methodology demonstrates an attempt to obtain representative samples of the graduate population to avoid bias by satisfied or dissatisfied constituents.

Criterion 2.3.2 Assessment, *"Each program MUST have an assessment process that includes a written plan with documented results. The assessment process MUST demonstrate that the program outcomes are being measured and that the program objectives are being met. Evidence MUST be given that the results are applied to the further development and improvement of the program. Evidence that may be used includes, but is not limited to, the following: student portfolios, including graded assignments and/or projects; nationally normed subject content examinations; alumni surveys that document professional accomplishments and career development activities; placement data of graduates; and employer surveys."*

Example 1: In presenting evidence of program graduates' learning, the aviation department at Institution X provides student portfolios consisting of graded exams and term papers.

Commentary on Example 1: While graded exams and term papers are important components of evidence that students are learning, verification should be provided that student work is clearly tied to course objectives and program criteria.

Example 2: In presenting evidence of student learning, the aviation department at Institution Z maps out how each piece of the student portfolio ties to course objectives and program criteria. A matrix demonstrating each exam and term paper and how each ties to specific objectives and criteria are provided.

Commentary on Example 2: This response provides a method by which the portfolio can clearly be tied to program objectives and criteria. The tie to program criteria is easily verified by the visiting team.

Criterion 2.4 Curriculum, *"The professional component MUST include:*
"... c. *The following aviation topics: . . .*
"... 6. *Meteorology and environmental issues."*

Example 1: In presenting evidence that the professional component includes meteorology and environmental topics, the aviation program at University X submits a copy of the catalog descriptions for AV 201 that includes the phrase, "The course addresses the following topics...meteorology, and environmental concerns."

Commentary on Example 1: While catalog descriptions indicate that certain topics are expected to be covered in coursework, they are not evidence that topics were actually addressed.

Example 2: In presenting evidence that the professional component includes meteorology and environmental topics, the aviation program at University Z provides a course syllabus and highlights sections of course examinations indicating students were tested on the topics in question. Additionally, term papers addressing the topics within the courses are provided along with an explanation that students had the opportunity to address these topics within the course.

Criterion 4.2 Program Criteria for Aviation Maintenance and 4.2.1 Baccalaureate Programs, *"... each program MUST provide evidence of a significant culminating upper division experience in aviation maintenance."*

Example 1: In presenting evidence of a culminating upper division experience in aviation maintenance, the aviation department at Institution X states that each student in the program is required to pass a comprehensive A&P exam administered by the FAA.

Commentary on Example 1: While the successful achievement of an A&P certificate is evidence of the completion of a component of the aviation

maintenance degree program, it does not represent an upper division achievement.

Example 2: In presenting evidence of a culminating upper division experience in aviation maintenance, the aviation department at Institution Z notes that students are required to complete MA 424, Project Management in which student teams create and manage a project involving airline maintenance. Reports of student-team briefings are recorded, evaluated, and maintained in an e-portfolio file. Access to these files are available to the visiting team.

Commentary on Example 2: This response relates to specific AABI program criteria and provides a method by which the evidence can be verified by a visiting team.

Criterion 4.5 Program Criteria for Flight Education and 4.5.1 Baccalaureate Programs, “ ... each program *MUST* provide evidence that the graduates possess the necessary knowledge, skills, and attitudes to competently and ethically function as professional pilots in the aviation industry.”

Example 1: In presenting evidence of program graduates’ learning, the aviation department at Institution X notes that most of its graduates are hired by regional airlines within three years of graduation.

Commentary on Example 1: While the placement rate is an important statistic, this criteria asks for a more in-depth external validation of the unit’s program. Evidence should be provided that relates to the graduates’ performance in industry and in specific areas of learning (knowledge, skill, attitude, and ethics).

Example 2: In presenting evidence of program graduates’ learning, the aviation department at Institution Z notes that it surveyed employers and asked them to rate these specific artifacts related to the AABI criteria (knowledge, skill, attitude, and ethics). Input from industry was used to modify the curriculum to address the identified deficiencies. The location of the surveys and the unit’s response were described.

Commentary on Example 2: This response relates to specific AABI program criteria and provides a method by which the evidence can be verified by a visiting team. Note: Many institutions have an Institutional Research Department that routinely surveys employers about the performance of the university’s graduates. The aviation unit can usually provide input to the survey questions so as to provide evidence to satisfy AABI criteria.

Criterion 4.5 Program Criteria for Flight Education and 4.5.1 Baccalaureate Programs, “*The program objectives MUST include certification/licensure as a Commercial Pilot with an instrument rating, and multiengine land rating or flight instructor certificate.*”

Example 1: The Flight Program requires national certification through the Commercial Certificate with the Instrument Rating and the Multi-engine rating. Official documents indicating the curricular requirements are presented as evidence that certification is required. Transcripts of flight students are presented from the Office of the Registrar and course metrics from the Department indicating that all students process the required certification at graduation. Course metrics will include information regarding passing grades and evidence of remedial work for any students who fail exams or check rides.

Commentary on Example 1: The team will need to verify that a sampling of students possess the required certificates and ratings.

7.0 Assembling and Presenting Evidence.

As the examples included in the previous sections clearly illustrate, many different kinds of evidence are useful and appropriate to the outcomes-based accreditation process. But the very breadth of evidence as a concept poses operational challenges to any institution as it prepares for review. The level of staffing of Aviation programs varies greatly between our AABI institutions. Some have numerous faculty and staff, while others may have just a few. It may be necessary for smaller programs to enlist the help and support of departments and functions within the College or University but outside the program to collect and present evidence.

It is not the intent of this Guide to provide detailed instructions for assembling and presenting evidence but rather to examine more specifically the ways a program might begin the tasks of gathering and organizing information and preparing exhibits.

7.1 Where Does Good Evidence Come From? It has often been stated that colleges and universities are data-rich and information-poor. Indeed, most institutions collect and store a remarkable amount of data about students, courses, faculty, staff, facilities and financial activities. However, the places where these data are kept are often scattered and unrelated, and the formats in which they reside often render them difficult to retrieve and manipulate. As a result, plentiful data sources are usually not tapped as fully or appropriately as they might be to yield useful information. At the same time, colleges and universities keep myriad documents, including individual records, descriptions of policies and requirements, and correspondence and meeting minutes that might qualify as evidence. Because most institutions are administratively decentralized and functionally dispersed, these documents and materials are similarly scattered and hard to access. Given this condition, the accreditation process is an excellent occasion for departments and institutions to take stock of their evidential resources and mobilize them to their advantage. One way to do this is to systematically inventory available information.

To conduct an inventory of this kind, an internal team typically visits each administrative office and academic department to determine the kinds of records that it keeps, any surveys that it might have administered, and any local data collection efforts that it may have undertaken. At the same time, such teams sometimes follow well-established record-collection or data-gathering trails to determine what kinds of data are collected, from whom and on what schedules. For example, they might follow in the footsteps of a typical student as he or she seeks information about attending the institution, applies and is admitted, attends orientation, registers for and attends classes, applies for and receives financial aid, is advised and provided academic assistance, enters a major (and often changes it), engages in co-curricular activities, participates in campus wide or department-level surveys or assessments, completes a program and graduates, and is contacted by an alumni or placement office after graduation. At each point in this longitudinal process, records or data are generated and the audit team can document who has them, what form they are in, and where they go. Similar exercises can be undertaken to examine personnel and faculty records or to look at the processes through which curricula are developed and evolve.

Much of this work may already have been done by Institutional Research or Student Affairs offices and it pays to begin with the data/information inventories that such offices have compiled. In the context of accreditation, it is frequently useful to structure the resulting general inventory in terms of the kinds of evidence that appear most relevant to particular Criterion and to use these Criterion in the department's own planning and internal review. This may, in turn, suggest important gaps in the institution's evidential resources that ought to be addressed. More importantly, it should gradually lead departments and institutions to think about their information resources as a system, one that is organized intentionally to address important questions about institutional performance and capable of relating

quite different kinds of information to examine important educational questions. Finally, while the accreditation process provides institutions with a useful occasion to take stock of their data and information resources, the objective of compiling an inventory is not to "show" AABI that these resources exist. Rather, it is to assist aviation departments in organizing and improving both the content and the utility of their own internal mechanisms of self-inquiry and improvement.

7.2 Sources of Evidence: Regardless of how the task of taking stock of evidence is approached, departments will need to deal with many different sources and types of information including records data, documents, surveys, and assessment results. Although each is potentially useful as evidence, each also has its own peculiarities, and each has a set of particular applications in accreditation. Some of the most common sources and types of evidence available for use in the accreditation process are reviewed next:

7.2.1 Institutional Databases. Large computerized database systems, like student records systems, personnel systems and financial accounting systems, currently do most of the transactional business of colleges and universities. As a result, they contain much of the data needed to describe and analyze current operations. Indeed, such databases are the source for the bulk of the institutional fact-book type information (e.g. enrollment counts, course inventories, faculty/staff counts, and financial reports) required by AABI as part of the Self-Study Report.

Institutions that have an established Institutional Research function will already have compiled most of this information in an accessible form. This is also the kind of information that is regularly reported by public institutions to state authorities and to the federal government through the Integrated Postsecondary Education Data System (IPEDS). For institutions that lack an Institutional Research office, assembling such required reporting data is thus often a good first step in preparing for a self-study. But, institutional databases can also be mined to yield even more useful information about institutional and program performance. For example, data drawn from them can be used to examine how students flow through the institution and what kinds of course-taking patterns they engage in; how faculty teaching loads are distributed; the extent to which program, faculty and physical/ financial resources are aligned with the institution's mission and core values; or what kinds of investments the institution is making in renewing its physical and human assets. Extracting this information, however, requires the ability to find, link, and manipulate disparate pieces of data that often reside in different databases and that require some expertise to access. As a result, many institutions find it useful to create distinct analytical databases that contain frequently used, carefully chosen, census-positioned extracts drawn from operational data systems.

7.2.2. Documents. Written documentation is voluminous at most colleges and universities, and only the offices that generate them generally keep documents. Many of the documents most useful for accreditation, though, tend to be published and are readily available. These include items such as catalogs, student and personnel handbooks, policy statements, and strategic planning or program review documents. Other potentially useful documents will be harder to locate, like minutes of key meetings, committee reports and curriculum documentation (e.g., syllabi, assignments). In these cases, the process described above can prove especially useful as a way to start organizing evidence.

The principal challenge associated with using documents as evidence, of course, is that they are numerous and bulky. Particular care, therefore, will need to be taken to select only a few carefully chosen examples as exhibits. A department may simply provide a listing of additional documentation in connection with a given Criterion, which a visiting team might inspect on arrival. Institutions that keep documents on-line might additionally provide URLs or other references that can enable a team to quickly access them. For any documents actually selected as exhibits, it is useful to make certain that their relevance is clear by providing a brief introductory cover statement linking them to the AABI Criteria. To streamline the process, textual extracts drawn from selected documents may be more effective as evidence than the full document, provided that enough referential material is given for the visiting team to retrieve the full text, if needed.

7.2.3 Surveys. Results of surveys of students, alumni, faculty/staff or key constituents are among the most popular kinds of data used to examine institutional performance. This is partly because surveys represent a relatively efficient way to obtain such information. For example, survey items can be designed specifically to address questions like how much students feel they have learned, how satisfied students and staff are with the kinds of services the institution provides, or the degree to which the institution's core values are shared among its stakeholders. However, using surveys as evidence in conjunction with the accreditation process also poses a number of challenges.

First, there are generally a lot of them. Among the first things most institutions discover in the course of a data audit are exactly how many surveys there are. Usually, such a proliferation of surveys occurs because many offices need information and, without any central coordination, choose to design and administer their own. Devices helpful in organizing survey information in the context of AABI accreditation involve the use of annotations to relate individual survey items to particular AABI Criterion

Second, survey results often contain missing data and are based on incomplete response rates. Accordingly, if used as evidence, they should

always be accompanied by documentation that indicates the populations surveyed, the response rates obtained, and any information about the representation of those who responded.

Third, survey data at most institutions tend to be under analyzed. Typically, only item means or the percentages of participants answering each response category are reported, with few subpopulation breakdowns or comparisons across items provided. Yet, because responses to survey items can vary substantially with even slight variations in question phrasing, the best information contained in surveys is often revealed by comparisons: among different types of respondents, across the same types of respondents over time, or with results obtained at other programs administering the same survey.

Finally, the particular limits and role of survey-based information in the accreditation process need to be fully understood. Surveys are at their best when they tell you something about how students (or former students) are behaving and how they feel about their experiences. They are typically not very good at determining what and how much students have learned. So, while satisfaction is clearly important, measures that look only at whether, or how much, students are satisfied are not enough. The clear importance is that aviation departments be able to provide direct evidence of student academic achievement, preferably in the form of authentic student work.

7.2.4. Assessment Results. Much of the evidence that an institution will muster will be based on local assessment processes. Like surveys, though, there are often a lot of these and their results pose particular problems of assembly, analysis and interpretation.

First, there are many kinds of assessments, and individual programs and departments often conduct them more or less independently. Among the most commonly encountered methods are: nationally available assessment examinations in general education or selected major fields (for which comparisons with national norms can be reported), professional or occupational licensure or certification examinations (e.g. FAA written, practical examination scores), faculty-made comprehensive examinations (virtually always in the major), capstone courses in which selected assessment exercises can be embedded, portfolios and work samples drawing from previously graded student work, benchmark assignments embedded in regular classes and scored by teams of faculty employing specially designed scoring guides or rubrics, and self-reported gains in knowledge and skills reported by students on questionnaires. Details of the strengths, weaknesses and quirks of each method are beyond the scope of this Guide.

A first major challenge is to document and assemble relevant assessment

studies, no matter what their character. As is the case with surveys, it is generally wise to record aspects such as the purpose of the assessment, the population covered, why it was undertaken, key results obtained and what was done as a result of what was learned. Assessments, like survey results, often involves the use of samples where data are missing, so information such as response rates and analyses of representation will generally be appropriate. Assessment results are also rarely useful until they are analyzed to reveal patterns of strengths and weakness across different outcomes; among different student populations; or over time. But, because assessment is so frequently seen by departments as summative, assessment results are subject to the problem of being reported only in the aggregate to demonstrate whether or not a set of previously fixed objectives has been attained.

This last observation highlights a deeper problem with many assessment studies: they are poorly designed to answer well-focused research questions that somebody at the institution really wants to know. As a result, they are often not positioned well to inform improvement. Instead, assessment methods should be carefully matched to specific problems and settings. For example, student performance on standardized achievement tests may effectively benchmark aggregate program performance against peer institutions. However, such performances rarely provide sufficient detail for faculty members to intervene and improve them. Furthermore, assessment results are not always useless if they don't lead to concrete changes in practice. Sometimes their utility lies in documenting what is done effectively, triggering a new round of questions, or in deepening collective understanding about a major set of issues.

7.2.5 Special Studies and Reports. Especially useful as sources of evidence for accreditation will likely be a range of previously compiled reports or analyses that contain data already analyzed and compiled from the above sources. Institutional Research reports are among the most prominent, and typically include retention/completion studies, faculty/course workload analyses, and surveys of students. Another prominent source of "semi-analyzed" data is often found in Program Review. In most Program Review approaches, each department collects a common set of data (or has it supplied in the form of indicators from a central source).

Needs assessments and strategic planning studies constitute another frequently available source, and usually contain data not regularly collected by the institution, such as constituent and stakeholder perceptions drawn from interviews and focus groups, available social statistics to determine program demand, and inventories of what other institutions are doing. Other available sources may include campus climate surveys (administered to some combination of faculty, staff and students) or consultant reports on various topics. Studies of this kind can play an important role as evidence in the

accreditation process:

The data they contain and the conclusions they reach can be directly cited in connection with a particular area of performance. Where this is the case, it may be best to excerpt the finding, together with references so that further follow-ups can be conducted. The fact and frequency of such studies, however, and the range of topics they address, can also serve as de facto evidence. Thus, a summary chart showing the range of such studies undertaken over the last five years can be a useful exhibit. The chart can address the topic covered, the kinds of information collected, principal findings and some indication of how the results of each study were used. This last suggested entry for this chart, showing how the results of such studies were actually applied, would always render the evidence more persuasive.

Sources such as these will typically provide most of the information needed to support accreditation. However, it is appropriate to continually reemphasize the importance of being creative and taking risks. Some of the most innovative pieces of evaluative information have arisen from simply reflecting on the process being examined to determine whether some kind of unobtrusive evidence might be. And, as noted previously, it is important to involve all of the institution's potential data providers in brainstorming about potential evidence, as well as in the task of compiling an inventory. Among the most prominent of these are Institutional Research, the Admissions and Registrar's offices, various Student Affairs offices, Academic Affairs offices (as well as individual schools and departments), Human Resources, Finance offices and Alumni Affairs offices. In this regard, it is important to stress that the task of assembling evidence can never start too soon.

Inventories of potential evidence to support accreditation are best compiled early in the process, and should be continually updated as new information becomes available. It must be remembered that the intent of the AABI outcomes process is to see the development of a culture of evidence that is ongoing, rather than periodic.

7.3 How Should Evidence be Presented? The examples of evidence noted in this Guide are quite different, and AABI expects a similar variety in what departments advance. However, such variety can pose significant challenges in presentation when preparing the Self-Study Report. As a result, it is useful to consider some common forms of presenting evidence and, within each, to provide some general guidance on what makes each of them effective.

7.3.1 Exhibits. Exhibits constitute the basic building blocks; therefore, they must be selected with considerable care. Exhibits can take many different forms, including data tables, charts, documents, and links to web sites, pictures or audio presentations. The essential character of exhibits, like

counterparts in a research inquiry of any kind, dictates that they be authentic, self-contained and documented.

7.3.1.1 Authentic Authentic implies that the best exhibits represent something real: a product or byproduct of an actual process or event, rather than a description of it. Thus, minutes of a key meeting, samples of actual student work or the direct testimony of a key stakeholder all constitute more effective exhibits than the narrative contained in a traditional self-study. This is not to say that no narrative should be included; it simply means that the exhibit itself should be as authentic and real as possible, preferably generated in the natural course of doing business.

7.3.1.2 Self-contained Self-contained implies that most exhibits will be presented independently to demonstrate some aspect of a department's commitment, such as a link to a Criterion. Again, this is not to say that individual exhibits should have nothing to do with one another. In fact, when addressing a given Criterion, it may be appropriate to present a group of exhibits that illustrate different aspects of the topic or that present mutually reinforcing kinds of evidence.

7.3.1.3 Documented Documented implies that it is made clear what the exhibit is, where it comes from and what it is intended to demonstrate. This is typically accomplished by means of a short accompanying narrative that, at minimum, provides this context for a reviewer and can allow a visiting team to pursue the evidence further on site.

A commonly encountered difficulty is that some powerful exhibits are potentially quite large – for example, a strategic plan, committee report or results of a program review. In such cases, in order to preserve authenticity, it is frequently effective to present an extract, with information provided about how to access the entire document. Examples might include the agenda of a key meeting or an extracted data table, presented along with a brief narrative describing the event or document itself.

Another difficulty frequently arises when a large number of exhibits of the same kind are potentially available – for instance, examples of student work or faculty scholarship. In such cases, presenting selected samples will be appropriate, together with statistics indicating how the selected cases are broadly representative of the parent population and information that would allow a visiting team to examine additional cases on site.

Finally, exhibits should be referenced as evidence of a particular claim, much as a research finding should be referenced in a piece of scholarship. Indeed, the manner in which the department reflects on the body of evidence as a whole in the context of its Self-Study Report, and how it draws appropriate implications and conclusions, is an integral part of the accreditation process.

7.3.2 Indicators. Indicators constitute a special kind of exhibit, consisting typically of statistics designed to monitor institutional performance or to indicate the condition of an institution's assets and programs. Indicators may be direct or indirect, and are often the product of calculations involving a number of related measures. For these indicators to be valid and useful, it is necessary that they reflect statistically the underlying area of performance they are supposed to represent. Many institutions have established "key performance indicators;" "dashboards" or "balanced scorecards" in recent years because such devices enable decision-makers and stakeholders to quickly monitor a range of important areas of performance at the same time. As a result, if an institution has established such key indicators, they should probably constitute a key exhibit for the Self-Study Report.

Like the broader category of exhibits, good indicators share a number of important properties.

First, rather than being presented individually, good indicators are part of a system. This means they should be mutually reinforcing and should attempt to examine different parts of how the institution functions. Indeed, in many cases, indicator systems are deliberately designed to reflect policy trade-offs. Including data on admissions standards and retention/completion rates in the same indicator set, for instance, can help avoid the easy answer of raising retention simply by restricting admission.

Second, good indicators are not merely descriptive, but are centered on performance. This generally means that they are constructed as rates or ratios, such as admissions yield rates, pass rates on licensure examinations, faculty productivity or rates of depreciation in instructional equipment. Finally, good indicators are straightforward and easy to interpret. No matter what they represent, it should be clear what they mean. This implies that complex statistical manipulations should generally be avoided and it should be clear what good performance means. Sound indicators should do more than simply provide information; they should also provide decision-makers with guidance about how to improve things. In short, indicators can be extremely useful as evidence in the accreditation process, both for what they directly communicate about the institution's or department's condition and performance, and for what they say about how it uses information in planning and decision-making.

7.3.3 Data Displays. Data displays, including tables and graphs, will also be prominent among the exhibits that any institution presents as evidence. Thus, institutions need to be aware of the characteristics of effective data displays.

First, a good data display has a central message, and it should be constructed so that this message is featured. This is why graphics are often more effective than columns of numbers. Graphic displays force us to simplify messages and are usually far better than data displays at showing trends and contrasts. To reinforce this point, it is often useful to convey the message of a display in several different ways by showing the picture itself and by titling the display with a headline that announces the principal finding it contains.

Second, a good data display allows ready comparisons to be made across subpopulations or units, over time or against an established standard. This means that its entries should always be normalized in percentage terms rather than as counts or totals. They should also facilitate the judgment of relative performance. Finally, good data displays contain sufficient documentation for a reviewer to judge the quality of the evidence being advanced and information on how he or she can find out more. For example, numbers of observations in each category should always be included so that the significance of any observed differences between subpopulations or categories can be assessed. In the case of survey data, information on response rates should be provided.

7.3.4 Case Studies. Often, the best way to provide compelling evidence is to tell a story. Case studies that address how a particular department/program initiative unfolded or how a specific area of performance can be examined in detail at the level of a particular academic unit or program are therefore attractive as evidential exhibits. The advantages of case studies are clear.

First, they allow the topic to be treated with depth and subtlety, far more so than in a more general narrative or a summary table.

Second, their authenticity renders them highly credible. While it is possible to write a general narrative that is invariably glowing about performance, it is extremely difficult to create a case example that doesn't contain examples of challenges as well as triumphs.

Finally, presenting several cases allows the program to demonstrate a variety of approaches or demonstrations of effectiveness that are mutually reinforcing precisely because they are different.

As evidence, case examples do have equally prominent drawbacks. The biggest of these is that the case in question may be unrepresentative and, indeed, may be chosen largely because it is an exception. Departments should, therefore, take particular care to provide information about the relative typicality of the story about to be told when presenting cases as evidence. Case studies can also be excessively long and detailed, even when they are strongly illustrative of a particular area of performance. For example, it is often useful to present them in a standard format of some kind, noting context, actions taken, lessons learned and so on. Like other exhibits, case examples need to be documented sufficiently for reviewers to follow up on site. Further, it is often useful to provide either contact information for people to talk to further or links to additional information.

8.0 References.

This Guide is not intended to be a methodological textbook, and many additional points about how to handle different kinds of evidence are addressed by the sources listed in this section. In selecting modes of evidence, departments are always well advised to think carefully about the questions they are investigating and what information will be most authentic and illuminating. At the same time, they should remember that a mix of exhibits of different kinds would almost always provide the most compelling demonstration. Most importantly, they need to consistently frame their search for evidence and their dialogues about its meaning in terms of a wider spirit of inquiry and scholarship.

One implication is that evidence of any quality about important questions will usually be more valuable in the accreditation process than perfect data about relatively trivial questions.

Another implication is that institutions should not be afraid to take risks by using new methods to gather information about important questions, even if they don't always yield the anticipated results. Not every inquiry results in a definitive answer or changed behavior. Avoiding hard questions about institutional performance, on the other hand, will neither advance self-knowledge nor lead to meaningful improvement. Program improvement is ultimately what AABI wants the accreditation process to be about.

Here are references that can provide additional insights:

Bers, Trudy H., with Jeffrey A. Seybert (1999). *Effective Reporting*. Tallahassee, FL: Association for Institutional Research (AIR). A brief and highly-readable guide to presenting data and information in the context of institutional research. Addresses the reporting of both qualitative and quantitative information, and is especially strong on the use of graphics and the emerging possibilities of web-based reporting. A more thorough (and probably the definitive) treatment of graphics can be found in Tufte, Edward R. (1983). *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press.

Borden, Victor M.H.; and Banta, Trudy W. (1994). *Using Performance Indicators to Guide Strategic Decision Making, New Directions for Institutional Research #82*. San Francisco: Jossey-Bass. This edited collection describes a number of approaches to constructing performance indicators in higher education settings. Particularly useful is an extensive appendix listing some 250 higher education performance indicators grouped under 22 categories of performance.

Council for Higher Education Accreditation (2000). *The Common Data Project*. Washington, DC: Council for Higher Education Accreditation (CHEA). Reviews the current data requirements of both regional and specialized accrediting agencies, and propose a common core of data for use in the accreditation process. Definitions and sources for proposed data elements are included.

Ewell, Peter T. (1989). *Enhancing Information Use in Decision Making, New Directions for Institutional Research #64*. San Francisco, CA: Jossey-Bass. This is an edited collection of essays that discusses a range of techniques for using information more effectively in college and university settings. Includes analyses of lessons drawn from evaluation practice, the organizational context for information, the psychological dimensions that affect information use, and techniques for effective reporting. For additional examples of innovative reporting formats, see Kinnick, Mary K. (1985). Increasing the Use of Student Outcomes Information, in P. T. Ewell (ed.), *Assessing Educational Outcomes, New Directions for Institutional Research #47*. San Francisco: Jossey-Bass, pp. 93-109.

Ewell, Peter T.; and Lisensky, Robert (1988). *Assessing Institutional Effectiveness: Re-Directing the Self-Study Process*. Washington, DC: Consortium for the Advancement of Private Higher Education (CAPHE). Based on a project involving 10 colleges, provides guidance on how to identify existing data and information resources and how to organize the presentation of evidence around strategic themes. Emphasizes the notion of institutionalizing information as a permanent strategic resource.

Jones, Dennis P. (1982). *Data and Information for Executive Decisions in Higher Education*. Boulder, CO: National Center for Higher Education Management Systems (NCHEMS). Addresses the basic properties of data and information in a higher education context, with particular emphasis on the need for information to be tailored to the characteristics of users and particular kinds of decisions. Provides a useful review of the properties of good information in a decision-making context, as well as a conceptual overview of the structure and contents of a comprehensive management database for colleges and universities.

Light, Richard J.; Singer, Judith D.; and Willett, John B. (1990). *By Design: Planning Research on Higher Education*. Provides an unusually readable and accessible approach to the basics of designing and implementing evaluation research in college and university settings, based on the first five years of experience at the Harvard Assessment Seminar. Specific topics addressed include formulating appropriate

research questions, identifying target populations, choosing the right evaluative methods and presenting results in an actionable form.

Webb, Eugene J.; Campbell, Donald T.; Schwartz, and Richard D. (1999). *Unobtrusive Measures: Non-Reactive Research in the Social Sciences, Revised Edition*. Sage Classics Series, 2. New York, NY: Sage Publications. This is the classic treatment of unobtrusive measures such as direct observations and "footprint" data, revised and updated. Still provides the best general introduction to this topic.

Whiteley, Meredith A.; Porter, John D.; and Fenske, Robert H. (1992). *The Primer for Institutional Research*. Tallahassee, FL: Association for Institutional Research (AIR). Provides a basic orientation to the principal methods and tools of institutional research in the form of a dozen essays prepared by leading practitioners. Among the topics addressed are student impact, faculty workload analysis, persistence and student tracking, diversity, cost analysis, peer comparison and academic program review. An earlier edition covers a different set of topics and is also useful [Muffo, John A.; and McLaughlin, Gerald W. (1987)].