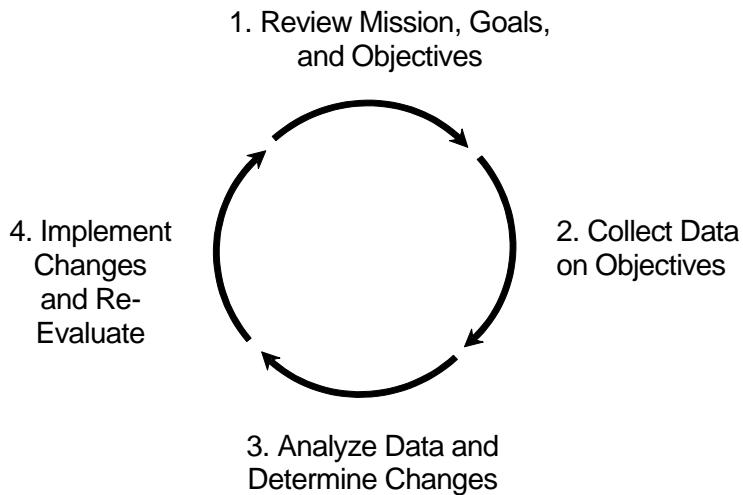# Department Self-Evaluation Supplement

Introduction

Self-evaluation is a process by which institutions and programs determine the effectiveness and currency of the program. Institutions use the self-evaluation process to introduce change in a deliberate way and to improve overall effectiveness.

The self-evaluation process should include the following components:

1. Review Mission, Goals, and Objectives

2. Collect Data on Objectives

3. Analyze Data and Determine Changes

4. Implement Changes and Re-Evaluate

This document offers suggestions on how a chemistry department, or departments housing chemistry programs, can engage in a meaningful self-evaluation process. There are many formats for self-evaluation, and the examples provided are meant to be illustrative rather than prescriptive. Many departments are involved already in some form of self-evaluation, due to institutional or regional accreditation requirements. Taking advantage of existing review mechanisms is a useful means for beginning the departmental self-evaluation process required by ACS.

1. Create, modify, or review mission statement, goals, and objectives

While a *mission statement* describes the vision of an institution, *goals* should be concrete statements of what one wishes to achieve and *objectives* must be measurable. The institution may already have a mission statement, e.g., "to provide a liberal arts educational experience in a residential environment" or "to improve access to education opportunities for underserved populations." The department might also have goals of its own, e.g., "to prepare undergraduate chemistry and biochemistry majors to apply the concepts of science in the

professional and academic worlds," "to provide experience with state-of-the-art instrumentation and analysis methods," or "to provide a personal mentoring environment that encourages students to achieve their personal and professional goals."

If a chemistry department does not have a set of specific goals, then it should begin the self-evaluation process by deciding its goals. When generating goals, it is important to include all department members in the process. Brainstorming among administration, faculty (full-time and part-time), staff, and students (undergraduate and graduate, majors and non-majors) can produce a list of goals, which can then be organized into a tiered list of general and specific goals.

Objectives are very specific, quantifiable statements that measure whether a goal is being achieved. For example, a department may have as one of its goals, "preparing students to attend top graduate schools in the chemical sciences." Two objectives toward meeting this goal may be: 1) Provide every chemistry major the opportunity participate in a research project in a faculty member's laboratory; and 2) Students will emerge from key chemistry courses demonstrably more accomplished than the national average. A strategy for measuring this latter objective might be administering the standardized ACS examinations at the completion of the organic and physical chemistry sequences.

Once a set of goals has been developed, the department should decide on which goals it wants to promote. If the self-evaluation is externally initiated as part of a standard review process, then all objectives might be measured. However, if the self-evaluation is internally initiated, then a department might focus on a self-identified need that is expressed in a limited number of objectives.

2. Collect data on objectives to measure progress towards goals

To determine if the department's goals are being met, data are collected to match the corresponding objectives. The type of data collected, qualitative and/or quantitative, is determined by the objective. If the objective is to determine the appropriate instrumentation to solve a real world problem such as the pollution of a local stream, then a qualitative assessment might be used in which each student's assessment of the situation can be analyzed and judged for quality. Alternatively, a quantitative assessment of the percentage of students who score at a particular level on such an assignment can be reported.

One difference between quantitative and qualitative data is that quantitative data can identify areas of concern, whereas qualitative data is useful in understanding how to improve the situation. For instance, if the objective to be measured is a determination of students' ability to select the appropriate instrumentation to solve a problem and the quantitative measure shows that students are not able to successfully do that more than 50% of the time as measured by their answers on tests, then more data should be collected to determine *why* students are not able to accomplish this objective. These qualitative data will be more labor intensive to collect and might involve interviewing students and staff to determine where the problem lies.

The data needed to answer the question of whether the objective is being met is dependent on the reason for the self-evaluation, the objective, and the amount of effort the department is willing to invest to answer the question. There is no one right approach that can be used effectively in all situations. However, analyzing the accomplishments of the students, faculty, and staff toward achieving each objective is usually a good place to start collecting data.

3. Analyze data to establish whether objectives are being met and determine needed changes

Preliminary review of the data may be conducted during the evaluation process to determine if the right questions are being asked of the right people. In particular, the data collected should capture both a measure of progress toward the objective and reasons that help or hinder achievement of the objective. Adjustments to the evaluation plan can be made midstream if the process is not yielding convincing data.

Once the data have been analyzed and the progress towards achieving an objective has been determined, the most important part of the self-evaluation process is deciding on what action to take to address the issue. For example, if students are not able to effectively determine which instrumentation to use to solve a real world problem, changes may be needed in the presentation of how the equipment works, access to the equipment, detailed feedback on students' work in learning how to use the equipment, practice solving novel problems applying the instrumentation, or better defined problems on tests that require the use of instrumentation.

4. Implement plan for change and re-evaluate

Identifying the problem and planning a change are only parts of the process for an effective self-evaluation. The devised change must be implemented in order for improvement to be possible. To promote consensus on implementation of a specific plan, the data collected and the analysis performed should be shared with all parties involved. Change is accomplished much more effectively if there is ownership of the plan by all participants including administration, faculty, staff, and students.

Self-evaluation is a cyclic process. Without monitoring the change by collecting additional data and determining if the needed change has taken place, the self-evaluation is incomplete. Self-evaluation must be ongoing for growth to continue.

Summary

The objective of self-evaluation is to determine collectively, what goals are important to the department, to evaluate regularly if the goals are being met, and to what extent. Once this has been determined, the department should be able to more clearly see what actions, if any, need to be taken to come closer to meeting its own goals. Many approval or accrediting agencies view the self-evaluation process and proposed actions as more important than identification of any specific shortcomings. Self-evaluation is a process, not a product, for the continual improvement of an organization.

Bibliography

The 2002 User-Friendly Handbook for Project Evaluation, http://www.nsf.gov/pubs/2002/nsf02057/start.htm

Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education, Barbara E. Walvoord, Jossey-Bass, 2004.

Last revised in August 2015