

USING EVALUATION TO FOSTER NYCETP GOALS: CASE STUDIES AND INTERCAMPUS COLLABORATION

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This article describes the use of case studies as part of the formative evaluation conducted for the New York Collaborative for Excellence in Teacher Preparation (NYCETP). While case studies are often conducted for evaluations by outside experts, consultants, or evaluators themselves, we developed a strategy for case studies that used NYCETP faculty to case-study each other. This strategy involved cross-campus collaboration and cross-discipline (Arts & Science and Education) collaboration, and thus actively supported one of the NYCETP goals. The case study strategy also included the development of a faculty (peer) review form for evaluation of documentation of new and revised courses. Procedures for case studies and examples of case study benefits for faculty and evaluators are also described.

The NYCETP and Internal Evaluation

The New York Collaborative for Excellence in Teacher Preparation (NYCETP) is a project with five campuses of the City University of New York (CUNY) and New York University (NYU). The internal formative evaluation is carried out by the Center for Advanced Study in Education (CASE) of the Graduate Center of CUNY. During the first year of the project, CASE focused on typical formative evaluation activities. These included documentation and formative feedback on collaborative workshops and conferences, and ongoing consultation on collaborative goals and implementation of particular activities, such as the workshops. In addition, an evaluator attended the meetings held by the principal investigators, and the internal and external advisory committees. The goal of the Collaborative was to produce “well-qualified teachers of science and mathematics for New York City schools and to increase the number of individuals who enter and successfully complete teacher preparation requirements in science and mathematics.” The Collaborative efforts to meet this main objective can be presented in six clusters of activities: (1) rethinking college instruction — methodology and structures; (2) developing new courses and programs; (3) developing new curriculum materials; (4) providing student support and career development; (5) recruiting promising students into teaching; and, (6) developing exemplary field sites for students.

In late spring, after reviewing collaborative goals and activities, the evaluators decided to attempt to focus the evaluation activities to actively promote very targeted NYCETP goals. The diversity of goals was resulting in a lack of focus for key project goals. These goals were: faculty development (1), and intra- and inter-campus collaboration in developing courses and curriculum materials, (2) and (3) above. We developed plans and procedures for cross-campus case studies of courses being revised and/or developed by NYCETP participants.

A case study strategy was deliberately designed to involve faculty in the same discipline area (i.e., science or mathematics) to talk one-on-one with another faculty member about a specific course. Although many of the conferences and workshops involved faculty presentations about a particular course or curriculum, there was not the detailed analysis of the context of the course, the students, and the curriculum that would be involved in a case study approach. Further, responses to evaluation feedback forms at these workshops and conferences confirmed that these activities provided formal and informal forums to converse about common ideas, issues, experiences, and concerns. However, the activities left faculty expressing a number of needs. These needs included requests for: more information on strategies to change instruction; more feedback and guidance on changing course materials; more in-depth discussions of actual course examples (including student work); and, opportunities to sit in on innovative math and inquiry-based courses, as well as facilitation of inter- and intra-college faculty visits.

All of these evaluation feedback reports supported the decision to have the evaluation activities focus clearly on the goals of faculty development, specific courses, and the cross-campus involvement of faculty in a case study process. Our goals were: (1) to focus on key courses taken by teacher education students — whether in liberal arts and sciences (A & S) or education; (2) to have NYCETP faculty from one campus go to another campus; (3) where possible, to involve in each individual case study an A & S faculty member and an education faculty member; and (4) where possible, to have the faculty member observe an actual class in the course being case studied. These goals have been met to varying degrees in the case studies conducted over the four years of the project, as discussed below.

The Case Study Process

The most frequent use of case studies in evaluation is illustrated by such projects as the one carried out by Stake and his colleagues [1]. In their project, a group of evaluators very experienced in writing case studies in evaluation visited a series of NSF-funded projects in teacher education and then wrote in-depth descriptions of each project for archival purposes. These descriptive documents are often considered “non-traditional” program evaluation [2], and are also more frequently used now in mixed method evaluations [3]. Case studies are valued for providing sufficient information that readers can form their own interpretations of the “case” being presented. Individual evaluators visit each project or case (or course in NYCEPT) and write a case study, much as an individual anthropologist or field-based researcher in sociology would do [4].

In the context of NYCETP, we formalized the case study to some degree in order to assist faculty to focus on aspects of the course that met the NYCETP goals. We drew on earlier work [5] to develop an outline for the case study. The purpose of the outline was to provide guidelines for faculty writing the case studies. The outline included the following categories: context, student-target population, faculty background, physical facilities, curriculum and materials, instructional methods, student outcomes and assessments, faculty roles, cross-discipline and field site collaboration, and course revision plans. Both the year one outline and a revised outline based on faculty feedback are available in ERIC [6].

The intent of the case study process was also to develop baseline reports that provided information about the courses before revision, as well as information on faculty practices and beliefs about teaching at that time. In the first year of the project, the co-principal investigators of NYCETP were asked to identify one or two courses on each campus for detailed documentation. They were also asked to identify faculty on their campuses who already teach courses similar to those identified for study, to carry out the case studies; that is, to write a detailed description following the outline. The case study faculty then visited another campus to observe a class and meet with the course instructor to obtain details about the course curriculum, materials, instructional methods, student outcomes, and assessments. Once the case study was written, it was sent to the evaluators, who reproduced copies and distributed them to the two faculty participants, the NYCETP central office, and one to each campus co-principal investigator for the

campuses involved in an individual case study.

Faculty participants in the case studies were given stipends of \$750 to write a case study and \$250 to be case studied. Faculty members who were teaching the courses were responsible for meeting with the faculty writer, collecting examples of course materials and student work, and clarifying aspects of the course as needed by the writer.

The Case Study Outcomes and Products

Year one case studies were carried out for eight courses and involved ten faculty, three in education and seven in A & S on the six campuses. Three courses were offered in education departments, four in mathematics departments, and one in a science department. Year two case studies were carried out for four courses and involved nine faculty (three in education and six in A & S) on four campuses. Two courses were in science departments, one was in mathematics, and one in education. Year three case studies involved three courses and six faculty (one in education and five in A & S) from five campuses. One course was in each area — education, mathematics, and science. Year four case studies were carried out for five courses, with eight faculty (two education and six A & S) involved. The faculty were from five campuses and a community college. One course was in an education department and four were in departments of mathematics.

Over the four years of the case studies, all of the NYCETP campuses were involved at least once, and a community college was involved in the fourth year. Thirty-three faculty members participated across the four years and twenty courses were documented in the process. These courses were distributed across the areas of education (6), mathematics (10), and science (4). As these numbers show, the sciences were not as well represented as mathematics.

Following the year one's case studies, faculty were interviewed about the case study process. Faculty reported that the outline was useful and the interactions had facilitated collaboration across campuses, as well as understanding of reform-based teaching and learning, in some instances. The in-depth visit on another campus assisted faculty to become clear about facilities that were necessary. One faculty member reported that she was better prepared to provide a request for space and materials than she

had been prior to writing the case study. Others reported changes in thinking about course revisions, such as incorporating more computer graphics and simulations, evaluation of entrance requirements for courses, increasing collaboration among students, and using manipulatives as an integral part of a course, and the need for greater coherence between math and math education courses. One faculty member interviewed reported the difficulties inherent in collaboratively revising courses (i.e., A & S faculty and education faculty).

The case study documents are the primary outcomes of the case study process, and a related, peer review process was recommended and described in year two [7]. Although the peer review process was not carried out, the *NYCETP Guidelines for Self-Study of Course Documents/Curriculum* was used in two ways. The first was in conjunction with faculty workshop/meetings discussing sample course documents and revisions. In this instance, the *Guidelines* provided feedback to faculty. The second was with the course case study documents, and in this respect the *Guidelines* served to provide some indication of the fidelity of the course to national standards and NYCETP goals.

The *Self-Study Guidelines* included check lists and ratings on whether course documents/curriculum met the collaborative student-centered instructional goals, course content goals, course/materials minimum expectations, and evidence of effectiveness of goals in mathematics and/or science, including student attitudes or other outcomes. There were also ratings for CETP programmatic goals (e.g., collaborations, alternative assessments, partnerships, urban context, and dissemination goals). The *Guidelines* were accompanied by a glossary of terms. Ratings of 13 course revision documents were summarized at the end of year three [7]. The ratings provide some indication that these courses were more student centered — that is, there was at least some use of inquiry-based approaches, focus on deeper understanding, and/or an emphasis on problem solving and critical thinking.

In the fifth year of the project, the *Guidelines* have been adapted and modified for review of lesson plans of students in methods courses in elementary mathematics and/or science. This revised rating form is currently being used in a pilot study with a small number of education faculty who are teaching methods courses. Again, the

purpose of these guidelines for reviewing lesson plans are to focus on CETP goals and to provide a method for faculty and students to review their work, in this case for lesson plans.

Case Study Benefits: Highlights

The outcomes above indicate the scope and procedures of the case study process and do not adequately convey the richness, depth, and impact on faculty of some of the case studies. Qualitative outcomes provide another perspective on the benefits of the use of faculty case studies in evaluations. The examples here highlight the benefits of faculty case studies both to the individual faculty and to evaluators, as well as supporting the project goals as cited above.

In the 1996 year one case studies, there were five faculty in mathematics and mathematics education who formed the beginnings of an enthusiastic working group in mathematics that met through the next two years of NYCETP activities. The individual meetings of pairs of faculty to discuss courses and common problems resulted in correspondence between them and sharing of course materials. In 1997, there was a case study of an exemplary collaboration between a mathematics faculty member and a high school teacher. The course, *Sequential [high school] Mathematics from an Advanced Standpoint*, was offered in the Department of Mathematics and Statistics, and was intended for students preparing to be high school mathematics teachers. The mathematics professor collaborated in the course development and was a participant observer for the duration of the course. The course instructor was the high school teacher who was writing an extensive document on the course development, syllabus, sample problems, and student responses as part of the requirements for a masters degree. One of the formative evaluators visited the class in session, facilitated the adaptation of the masters project into a case study, and asked the mathematics professor to write his substantive reflections on the course; the evaluator also wrote an overview to the two documents. The case study process offered flexibility and the resulting documents have also been disseminated outside the NYCETP (NSF National Visiting Committee and Queens College).

In 1998, there were also two exemplary case studies, one in science and one in science/mathematics education. The weekly one-hour recitation for *General Physics*:

Introductory Course in Mechanics, Heat, and Sound was case-studied by a physics professor from another campus. The recitation used *Mathematica* for a series of computer-based exercises with a focus on numerical solutions of physics problems. The case study offered the physicist an opportunity to thoughtfully place the use of *Mathematica* for exercises within: considerations of physics as a science; traditional and reform-oriented physics education; and, the goal of creative problem solving by analytical mathematics, potentially supported in the recitation exercises by numerical methods.

The second exemplary case study in 1998 was conducted by a professor in the Department of Mathematics and Computer Science, who visited a class on another campus and met with the education professor who developed the course, *Applications of Microcomputers to Mathematics and Science Instruction*. The course is conducted with hands-on use of major aspects of computer technology, and a syllabus and web links for the class. Assignments included developing web pages, group projects, lesson plans, research paper or grant proposal, and using “tool software,” as well as other instructional software. This was required for undergraduate students in the mathematics/science teaching programs. The course is highly praised by the computer science professor, who planned to disseminate information about the course/web site to education faculty on his own campus. The case study describes an effective integration of technology, instructional theory, and science/mathematics, including links with schools. The case study benefitted the computer science professor, making clear the challenge of NYCETP goals: the course required both extensive knowledge of science and computer tools-applications, as well as continually evaluating new web sites and creating links to them. The course instructor’s major goal was use of technology for enhancing student learning in mathematics or science.

The qualitative outcomes of faculty learning and deepening understanding of the NYCETP and national standards in science and mathematics are clear benefits of using the case study process. These intangible benefits appear to derive from the faculty’s exposure to other teaching examples and the use of case study writing which provide an opportunity to focus and reflect on the teaching and learning processes in classrooms similar to their own.

The major benefits for evaluators are “windows” into faculty course procedures and materials, as well as faculty reflections on courses other than their own. Further, the case studies provide sufficient detail that can be used with the *NYCETP Guidelines for Self-Study of Course Documents/Curriculum*. It is possible to make judgements about the extent to which courses meet NYCETP goals, as was done with the set of individual course documents prepared for the Collaborative. Overall, the use of faculty case studies provides benefits to faculty and evaluators, and supports overall NYCETP goals of collaboration between campuses and education/liberal A & S faculty.

Summary and Implications of the Case Studies

The NYCETP formative evaluation has been innovative in asking university faculty interested in teaching to be involved in conducting case studies. The original evaluation impetus for the case studies was to provide baseline data on courses designated for reform, and then to restudy these courses when revisions were completed. This was an unrealistic expectation. However, the case studies do include several excellent examples of reform courses, although at least two of these course reforms were well underway when the Collaborative began its first year. As mentioned above, the case studies provide sufficient detail for project staff, faculty, and evaluators to assess the fidelity of course reform to national standards and goals.

One of the most positive outcomes of the case studies was the cross-campus interaction among faculty, in depth, about individual courses. From the perspective of formative evaluation, the case study process directly supported the NYCETP goals. The use of NYCETP faculty participants, particularly in the first year, did contribute directly to faculty improvement of their course development efforts. This result, along with somewhat similar work by Muller [8] suggests that evaluators, particularly in the formative stages of projects, can add to project outcomes by developing strategies to directly involve participants (here, faculty) in the ongoing work of evaluation. The extension of the case study outline into the peer review process of course evaluation, and now into ratings of lesson plans, begins to provide a network of evaluation activities that support faculty development and can be transferred to ongoing project activities if project leadership continues.

The implications from the evaluator’s perspective are to make an active use of

evaluation activities to involve program participants in developing and/or refining evaluation “tools” or instruments, as well as using them. Well-structured, these evaluation activities and tools become a way to provide information and feedback for the participant’s own use, as well as for evaluation. ■

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