

“Steady Work”: The Ongoing Redesign of the Stanford Teacher Education Program

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For many years, teacher education has been the subject of persistent concerns (Goodlad, 1990; Holmes Group, 1986; NCTAF, 1996), many of which were reflected in a 1997 evaluation of the Stanford Teacher Education Program (STEP) (Fetterman et al., 1999). The evaluation noted the lack of a common view of the purpose of STEP, resulting in “contradictory practices and mixed messages” (p.9); fragmented coursework; faculty turnover; lack of collaborative planning; inadequate attention to classroom management and other pragmatic concerns; lack of attention to reading instruction and the use of technology; disconnects between the vision of STEP and the pedagogy embodied in courses and placements; and the proverbial lack of connection between theory and practice.

Teacher educators have struggled for years to place student teachers in classrooms that reflect state-of-the-art practice and are in synch with program coursework and with research on effective teaching. The articulation and sustenance of a common vision, and the development of a shared understanding of the goals of student teaching, are similarly long-standing challenges. The creation of a curriculum that is systematic and synergistic across courses and across the university and school components of preparation has been difficult in most institutions. Finally, teacher education programs remain the stepchildren of most universities, underfunded and under-resourced by many and treated with intellectual disdain by most (NCTAF, 1996).

Dissatisfaction with these conditions provoked a redesign of Stanford’s Teacher Education Program in 1998, with the hiring of new faculty on the heels of the above-noted evaluation. The redesign efforts aimed to address not only the problems that had been identified, but also the many new demands facing teacher education programs in California and nationally. These include changing demographics and growing diversity, which require greater

attention to social equity and inclusion, as well as the evolving knowledge economy, which simultaneously demands higher levels of learning for all citizens. If teachers are to develop new standards-based approaches to curriculum and assessment, work closely and effectively with a wide range of families, and participate in shaping school practices, they must be prepared to engage these responsibilities from a deeper base of knowledge than much teacher preparation now provides.

In response both to the constant challenges that have plagued teacher education over the years and to these recent, pressing demands, the STEP redesign sought to

- ❖ develop a coherent program organized around professional standards and a common vision of good teaching;
- ❖ strengthen knowledge about how to teach challenging content to diverse learners;
- ❖ support stronger links between theory and practice; and
- ❖ contribute to the re-shaping of local teaching and schooling by creating powerful opportunities for student and teacher learning.

In this paper, I describe how the redesigned STEP program has pursued these goals, what strategies have been used to implement specific changes in the program, what evaluations of the reforms have discovered about its effects and the broader outcomes of the program, and the additional efforts underway to fulfill the STEP vision.

The Redesigned STEP Program

The STEP program traditionally had several strengths. These included the involvement of senior faculty through-

¹ The redesign work and research reported in this paper has been supported by grants from the William and Flora Hewlett Foundation, the Carnegie Corporation of New York, and the Spencer Foundation, through a Senior Scholars Grant. Another account of these reforms was published in an earlier paper, co-authored with Karen Hammerness, in *Issues in Teacher Education*, Vol. 11, No.1 (Spring 2002): 17-30.

out the program; an emphasis on content pedagogy and on learning to teach reflectively; and a year-long clinical experience running in parallel with coursework in the one-year credential and masters degree program. The redesign of STEP sought to build on these strengths while incorporating new efforts. These included

- ❖ the incorporation of professional standards into course design, program assessments, and clinical work around a common vision of accomplished teaching;
- ❖ the development of a sequence of core courses designed to build a professional knowledge base across several interrelated strands of work representing knowledge of learners and learning; knowledge of content and pedagogy; knowledge of language, literacy, and culture; and an understanding of educational purposes and social contexts; and
- ❖ the development of structures that facilitate coordination across STEP courses and strong connections between students' coursework and clinical work.

Creating Coherence through a Common Vision and Standards

One of the central elements of the redesigned STEP program is the development of a common vision of what good teaching looks like—what a STEP graduate should be able to do—and a common vision of the pedagogy and practice that contributes to that development. The program is designed to graduate teachers who are prepared to work with diverse learners, reflect upon their practice, and inquire systematically into questions of teaching and learning that arise in their work with students. STEP also emphasizes a teaching stance that is concerned with understanding and responding to student needs in the light of challenging curricular goals rather than merely “getting through the book” or implementing teaching routines. Teaching practices are informed by research on learning, development, culture and context, and families and communities. STEP hopes to graduate teachers who not only practice effectively in the classroom but who also can take into account the bigger picture of schools and schooling—who are able to consider how equitable and ambitious student learning might be supported and reflected in school organizations and reform work more broadly. STEP's mission, in sum, is to help prepare its teach-

ers to practice state-of-the-art teaching and to be agents of change in their school communities.

In order to reflect this vision, the new curriculum includes a much stronger emphasis upon learning, including learning differences and difficulties; first and second language acquisition and development; reading and writing across the curriculum; child and adolescent development; parent and family involvement; and culture and social context. Courses have been added as well in subject matter pedagogy (subject specific Curriculum and Instruction or “C&I” courses increased to three quarters of instruction from two), classroom management, and school reform. A new technology-teaching plan was developed to ensure students' proficiency in integrating technology into the curriculum. The curriculum has also been redesigned to increase the opportunities for purposeful reflection on practice and to make connections across class work and clinical experiences. Additional practice in inquiry has also been infused into the curriculum, so that students may learn how to ask good questions about the teaching and learning in their classrooms as well as how to go about exploring those questions in fruitful ways.

STEP has implemented new structures that help to create tighter relationships between C&I courses and faculty, supervisors in the subject field, and cooperating teachers. STEP faculty meet each quarter to discuss central assignments and to learn about other courses STEP students are taking so that they can build upon and reinforce key concepts, principles, and standards as well as integrate their coursework with the work that students are doing in other courses. They often develop cross-course plans for specific activities, assignments, and readings and plan strategies to create stronger connections between theory, research, and practice. STEP supervisors meet regularly as well—at least monthly and sometimes more frequently—to discuss student teachers' development with regards to the standards, to share challenges and insights regarding their mentoring and support, and to continue to develop common norms and expectations about the work of student teaching and mentoring. Supervisors attend selected courses and meet periodically with faculty to share information about coursework and clinical work.

A new classroom assessment instrument and a new portfolio design for student teachers were developed. These incorporate the California Standards for the Teaching Profession and include tasks based on those of the National Board for Professional Teaching Standards that facilitate teachers' examination of their practice in relation to student learning. The earlier portfolio had a set of entries that were variable and independent from one another (e.g. assessments from one lesson; a lesson or unit plan from another; a videotape of practice from another). The new portfolio has entries representing key courses and areas of learning, along with more integrated investigations of teaching (e.g. a child case study; a curriculum unit; a teaching event that includes lesson plans, videotapes of lessons, evidence of student learning, and analysis of practice from a single unit of teaching). The entries in the portfolio are analyzed in terms of how they represent each of the CSTP standards, and in the portfolio summary statement, each student reflects on how s/he is progressing in each of the areas outlined by the standards, including plans for ongoing professional learning. This "teaching event" has been further developed for systematic scoring in a portfolio for pre-service teachers recently pilot tested by 12 California universities that have created a teacher performance assessment consortium.²

In addition to the traditional portfolio conference sponsored by STEP each spring, juried portfolio presentations now enable student teachers to present their work to a 4-member committee of university- and school-based faculty and peers. This practice has begun to create a set of shared understandings about teaching, teacher development, and teaching standards across the program, and to enable faculty to consider how their combined efforts "add up" to create a beginning teacher who will practice knowledgeably and continue to learn and grow.

A Sequential Program of Study Grounded in Understanding of Learners and Learning

The 12-month STEP program is designed to help students gradually develop a knowledge base of professional teaching practices, modes of inquiry, and reflection. A criticism of the earlier program had been that courses were offered in some years but not others, that the sequence of

courses was not always appropriate for students' developmental needs, that there were gaps in the curriculum, and that theoretical work in courses did not always include links to practice. The redesigned curriculum now includes five "strands" of coursework which address Social and Psychological Foundations; Curriculum and Instruction in the Content Area; Language, Literacy and Culture; General Pedagogical Strategies; and Practicum and Student Teaching. (See Figure 1.) While courses change somewhat each year based on evaluations and instructors' joint planning, the overarching goals and shape of the curriculum are stable.

Each strand addresses a central aspect of the knowledge base of teaching and seeks to develop knowledge, skills, and dispositions through connections between coursework and clinical work. Students are introduced to key ideas that are then deepened over time throughout their coursework. For instance, the Foundations strand is designed so that student teachers develop an increasingly complex understanding and appreciation of their students—from thinking about them as adolescents, to thinking about them as learners in schools, to thinking about the schools and community systems that support their learning. In the fall, in Adolescent Development, students are introduced to thinking about adolescents as young people developing academic, personal, and cultural identities and competencies across many domains in multiple contexts. During the winter, in Principles of Learning for Teaching, student teachers are encouraged to think about how to build upon their adolescent students' interests, knowledge, and linguistic and cultural diversity in order to make connections with their subject matter. And in the spring, in School Reform and Equity, student teachers wrestle with questions around the character of school contexts that might best support student learning.

Each course now includes analyses and assignments that link directly to the classroom and are pursued as part of student teaching. A number of courses include the use and conduct of case studies that build sequentially upon one another. For example, in the summer during their Literacies course, students write a case study of the literacy develop-

² The PACT consortium (Performance Assessment for California Teachers) consists of all of the campuses in the University of California system, plus Stanford University, Mills College, and the California State University campuses at Fullerton, San Jose, and San Diego.

STRAND	SUMMER	FALL	WINTER	SPRING
Social and Psychological Foundations	Educating for Equity and Democracy	Adolescent Development	Principles of Learning for Teaching	School Reform (<i>elective</i>)
Curriculum and Instruction	Curriculum and Instruction (C&I) in each subject area	Curriculum and Instruction (C&I) in each subject area	Curriculum and Instruction (C&I) in each subject area	
Language and Literacy	The Centrality of Literacies in Teaching and Learning		ESL Methodology (<i>elective</i>)	Second Language Practices and Policies
Practicum and Student Teaching	Practicum <i>Introduction to teaching as a profession, standards, & inquiry</i>	Practicum <i>Developing learning environments; communicating with parents</i>	Practicum <i>Assessment of student work and learning</i>	Practicum <i>Meeting the needs of exceptional learners; Assessing one's own teaching</i>
Pedagogical Strategies	Uses of Technology	Classroom Management	Teaching and Learning in Heterogeneous Classrooms	Literacy Development for Struggling Students (<i>elective</i>)

Figure 1. STEP Curriculum, 2002–2003

ment of a child in their classroom. In the fall, in Adolescent Development, students then write a case study of an adolescent, focusing upon describing and understanding him or her through a developmental-contextual perspective. In the winter, in Principles of Learning, STEP students write a case study of instruction in which they focus upon an instance of teaching and examine it in terms of what it revealed about both teaching and learning.

The power of these case studies is that they call upon students to use theory purposefully to explore, analyze, and understand their clinical experiences (Hammerness, Shulman, & Darling-Hammond, 2000; Hammerness & Darling-Hammond, & Shulman, 2002; Roeser, 2002). In the curriculum case study assignment, for example, students focus upon an instance of teaching a central topic, problem, or issue in their subject matter, such as evolution in science, ratio and proportion in mathematics, the use of the subjunctive in foreign language, or irony in English. Using key course con-

cepts about learning, such as transfer, metacognition, and cognitive apprenticeship, they analyze some of the challenges they encountered in teaching their subject—and their students had in learning it. Writing these cases helps students begin to appreciate the usefulness of theory in helping identify, articulate, and explore the dilemmas at play in their classrooms.

Central assignments, such as these cases, are developed in and reinforced by work in other courses. During the fall when students are writing their adolescent case, Practicum focuses upon developing and practicing methodological skills such as observing individuals and classrooms, interviewing, shadowing, and conducting student assessments. In the winter, when students are writing their case study of instruction, Practicum focuses upon further developing and practicing their skills in assessing student work. In addition, students construct a curriculum unit, teach it, and examine student learning in relation to their teaching goals.

Graduated Clinical Experiences Linked to Teaching Knowledge and Standards

PLACEMENTS CONSISTENT WITH THE STEP VISION. Pairing students with cooperating teachers (CTs) who reflect STEP's vision of teaching has become a priority for the program. Rather than selecting CTs based on self-nomination or principals' recommendations alone, cooperating teachers are now selected based upon direct, first-hand knowledge of their classrooms and teaching practices. STEP faculty and supervisors look for evidence that CTs' practices are consistent with the STEP vision of teaching using an observation protocol that allows for the rich description of what occurs in the classroom and that directs observers to focus carefully upon how learning happens in the classroom. The protocol asks observers to record what samples of student work look like; what the climate of the classroom is like; how the goals of the lesson were communicated and assessed; how the teacher found out what students knew prior to the lesson; and how the needs of different learners were addressed. This process heightens the probability that students are paired with cooperating teachers whose teaching practices reflect and reinforce what students are learning about in their STEP coursework. In order to develop more settings in which novice teachers can learn from expert practitioners, STEP has begun to offer a mentoring seminar to supervisors and current or prospective cooperating teachers, and is developing stronger relationships with a number of local schools, as described below.

GRADUATED RESPONSIBILITY. A second key shift in the student teaching experience has been the development of a more carefully scaffolded learning experience with an emphasis on graduated responsibility. In the past, many STEP students took on full teaching responsibilities shortly after they began in September with little mentoring or guidance from cooperating teachers. Although many learned to manage a classroom and get through lessons on their own, few learned in this way to work successfully with struggling students, and some developed counterproductive teaching habits focused more on survival than success with learners.

Rather than looking for schools willing to offer classrooms where novices can learn more or less by trial and er-

ror, STEP now looks for mentor teachers who are willing to offer their expertise. The STEP redesign developed a "graduated responsibility" plan that provides for a gradual assumption of teaching responsibilities. While student teachers play an active role in the classroom immediately as they engage in coplanning and coteaching, helping small groups, leading minilessons, and working on curriculum design, they do not take on fully independent teaching until many months later. Even when independent teaching begins (which for most student teachers occurs sometime in the late winter or early spring), the cooperating teacher is responsible for ensuring that the student teacher still has ample guidance. This process is also personalized so that the student teacher and her or his cooperating teacher and supervisor agree on a timeline that makes sense for each student teacher. Factors that go into developing the timeline included the student teacher's strengths and abilities as a developing teacher, and the classroom's particular schedule.

STANDARDS-BASED CLINICAL WORK. The California Standards for the Teaching Profession that are used to guide the curriculum and portfolio also guide STEP's supervision and assessment processes (Lotan and Marcus, 2002). Teaching supervisors and cooperating teachers use a standards-based observation protocol as a means of assessing student teachers' progress and development over the four quarters of STEP. The new classroom observation instrument gives clear guidance about the criteria to be used in developing and evaluating teacher performance. For example, rather than asking for unguided comments about classroom management, it provides concrete indicators of the beginning teacher's progress toward constructing a classroom that is psychologically safe for all students, as well as purposeful and respectful of different learners' approaches and needs. Rather than asking for general comments about teaching quality, the instrument provides benchmarks for teaching. Thus, it takes account of students' prior knowledge, carefully structures learning experiences to address this knowledge and specific learner's needs, appropriately uses different teaching strategies for different purposes, provides clear assessment criteria and opportunities for feedback and revision, helps students learn to self-assess, and so on. This approach makes it clearer to STEP

students, instructors, faculty, and cooperating teachers what “quality teaching” is—and enables much more purposeful, carefully triangulated work on its development in courses and clinical experiences.

Contributing to the Development of Local Teaching and Schooling

Good practice cannot be easily sustained in oases that stand in stark contrast to the desert around them. The STEP program has begun to create a web of professional relationships that seek to reinforce and continue to build environments where ambitious learning for diverse students can flourish. In addition to professional development opportunities for teachers, it has created professional development school (PDS) relationships with a small number of Bay Area schools.

Professional Development School Relationships

Professional Development Schools (PDSs) are school-university partnerships that seek to develop leading-edge practice through ongoing learning for novices and veteran teachers, research, and mutual renewal of programs. We believe that these kinds of relationships are essential to continued improvement in schooling and teaching, which relies on simultaneous changes in how teachers are prepared and how schools are organized and run. They are perhaps the only way to solve the chicken-egg dilemma that plagues school reformers and teacher educators: If schools of education prepare teachers for schools as they are instead of schools as they might become, long-term change is difficult. Yet teachers cannot be prepared for schools as they might be unless such settings exist as sites for training. Transforming schooling must go hand in hand with transforming teaching and teacher development (Darling-Hammond, 1994).

In order to support the improvement of practice, STEP has been developing professional development relationships with local schools that serve diverse populations and that are engaged in reforms of teaching and schooling aimed at excellence and equity. These schools serve as sites for the placement of cohorts of beginning teachers and as hubs for professional development activity focused upon

strengthening teaching and redesigning schools. The PDS relationships promote further coherence in STEP by providing opportunities for school and university faculty to coconstruct coursework and clinical work. PDS’s can also be a force for transforming practice in a region as they work simultaneously to restructure schooling and teacher education programs and provide professional development opportunities for veterans in the field.

STEP is developing and deepening relationships in a number of potential PDS schools, while reducing the total number of sites where student teachers are placed. In the 2001–02 school year, STEP has placed all sixty of its students in about fifteen local schools, in most cases, with clusters of four to eight students in each school. Three years ago, STEP student teachers were placed in thirty-five schools. STEP faculty envision that all of Stanford’s prospective teachers will ultimately undertake their student teaching in professional development schools.

Within these schools, current and prospective cooperating teachers have access to Stanford courses, support for National Board Certification, and a mentoring seminar that is now regularly available for supervisors and CTs, as well as others who may be working on the support of beginning or veteran teachers.

A variety of other partnership activities occur in PDS contexts. For example, the mentoring seminar was offered on-site at one of Stanford’s PDS partner schools, and served cooperating teachers, mentors, and others from neighboring schools. Two faculty at the school cotaught STEP courses with Stanford faculty. A special education teacher at the school helped develop field-based activities for student teachers and guest lectured for the STEP class. An advisory committee at the school constructed additional learning opportunities for student teachers, including “understanding teaching visits” to various classrooms where practices illustrating the CSTP standards could be observed. These standards were adopted for veteran teachers in the school, after CTs used them for observing student teachers. A more ambitious school-wide approach to student teaching was developed by school- and university-based faculty; one that includes rotations through a variety of classrooms, guided observation experiences, and a common plan for graduated

responsibility in assuming teaching duties. This document serves as a model for other PDS sites. Other PDS partnerships have infused technology into the curriculum for both high school students and student teachers and have supported technology-oriented professional development for veteran teachers, have worked on teaching strategies for heterogeneous classrooms, and have developed seminars and workshops for teaching English language learners.

In the fall of 2001 Stanford helped to launch a new public high school in East Palo Alto, a community that serves a population of low-income Latino and African American students, along with a small group of Pacific Islanders. The school enables teams of highly qualified teachers to work with groups of students over two year intervals, offering an integrated performance-based curriculum that is supported by a portfolio system of assessment. As a professional development school with Stanford, STEP faculty are involved in staffing the school, designing the curriculum and finding curricular resources for the school, and supporting professional teacher development. The school supports student teachers and provides a demonstration site for the development of other schools and teachers in the area. This model of new school creation will likely be the source of several other professional development school partnerships in the future.

Creating Professional Development Opportunities

Creating a profession of teaching—and a professional preparation program—depends upon the widespread availability of knowledge and standards for practice that provide a basis for teacher development and for program decisions. One source of such standards is the National Board for Professional Teaching Standards certification process. These standards provide a foundation for practice that is grounded in leading edge knowledge about content pedagogy, sensitive to the diverse needs of learners, committed to equity as well as excellence, and supportive of powerful professional development that deepens teachers' learning. In 1998–99, Stanford launched the Bay Area's first support group for National Board Certification. As of September 1998, there were only six Board-certified teachers in the Bay area. All six accepted the invitation to serve as support providers, along with a group of teacher educators, for Bay Area teachers

who wanted to pursue Board certification. About 25 teachers who applied for Board certification were joined at monthly Saturday sessions and small coaching groups by more than two dozen other teachers, principals, graduate students, and teacher educators who wanted to learn more about the Board process, and who together looked at videotapes of teaching, analyzed practice in light of the standards, and worked on the development of one another's teaching.³

Three years later, more than 100 teachers are meeting in this support group, and other support groups have been launched with Stanford's assistance by colleges, districts, and county offices in the area. This process has begun to develop a community of teachers who are armed with deeper knowledge and greater certainty about practice, more articulate about both their own practice and about instructional policy, and able to provide leadership in the profession. Some of these teachers have started new schools; some have mobilized the use of the standards in their districts and departments; some have served as BTSA mentors; and some have begun to serve as cooperating teachers, supervisors, and teacher educators at Stanford and elsewhere. The planting of these seeds allows cross-pollination that helps good practice spread across schools.

These spillover effects are a key to attaining STEP's vision. The goal is to create multiple pathways to productive professional learning for educators so that communities of practice can emerge that are ultimately more self-sustaining. Other strategies also support this goal. For example, to support the growth of knowledge about school reforms that better support teaching and learning, a school redesign course was offered as part of the Stanford Principals Program and was opened up to teacher leaders in selected schools. Additional work for the leaders of redesigning schools has been launched through the new Stanford School Redesign Network and the Stanford Educational Leadership Institute. Web-based resources, including sites that share curriculum units and assessments, and email list serves that allow teachers access to each other's ideas, are a supplement to

³ Ultimately about 75% of the candidates supported by the group were certified by the Board in November of 1999; the remainder banked their scores and all were awarded certification in the following year. The same success rate occurred in 2000, with about 75% of the participants receiving certification in their initial attempt and the remainder banking scores and submitting new entries during the subsequent year.

face-to-face supports. We hope that these kinds of efforts will support teacher education by developing settings in which teachers can learn, and continue to learn, to teach effectively.

Evaluating Outcomes of the Reforms

Almost as important as the process of undertaking these reforms has been the process of evaluating them, both as a means for developing a cycle of continual improvement and for developing knowledge about teacher education. Marilyn Cochran-Smith (2001) notes that

The question that is currently driving reform and policy in teacher education is what I refer to as “the outcomes question.” This question asks how we should conceptualize and define the outcomes of teacher education for teacher learning, professional practice, and student learning.... (p. 2).

Cochran-Smith identifies three ways that outcomes are currently being constructed: through evidence about the long-term impacts of teacher education on teaching practice and student learning; evidence about teacher test scores; and evidence about the professional performance of teacher candidates. We developed a set of studies that spans all three of these categories using a variety of methods and evaluating a range of outcomes. These include

- ❖ a written pre- and post-test assessment of foundational teaching knowledge, using the INTASC Test of Teaching Knowledge as an instrument (Shultz, 2002);
- ❖ an observational assessment of clinical teaching practice, using a rubric based on the California Standards for the Teaching Profession, with multiple samples of performance over time (Lotan & Marcus, 2002);
- ❖ surveys of the views of graduates and employers about their preparedness for different dimensions of teaching and about their beliefs, practices, and career paths (Darling-Hammond, Eiler, & Marcus, 2002);
- ❖ an interview study of graduates’ views of their learning in STEP, conducted with those who had had prior experience in teaching before entering the program and, thus, could reflect on what they learned from formal preparation vs. classroom experience alone (Kunzman, 2002, 2003);
- ❖ an interview and artifact analysis of students’ learning with respect to the teaching of English language learners, using syllabi and student work samples as well as interviews to evaluate what students had the opportunity to learn and what they did appear to learn (Bikle & Bunch, 2002);
- ❖ an observational study of the teaching practices of graduates after they leave STEP (Hammerness, 2002); and
- ❖ Studies based on work samples and interviews of specific kinds learning that results from the use of case writing in teacher education courses (Hammerness, Darling-Hammond, & Shulman, 2002; Roeser, 2002).

The data represented in the studies include assessments of candidates’ learning and performance from objective tests; from supervisors’, cooperating teachers’, and researchers’ observations; from work samples; from reports of candidates’ practices; and from candidates’ own perceptions of their preparedness and learning, both during the program and once they had begun teaching. We found analyses of these different sources of information especially productive where the data could be triangulated across multiple data sources. Knowing that the results of teacher education are frequently only perceptible after candidates enter the classroom—sometimes years later—we are also now eager to develop more research about candidates’ performance, and their students’ learning, while they are engaged in teaching.

What We Learned

We were interested in learning what our candidates felt they had learned in the program (perceptual data collected through surveys and interviews); we also wanted to have independent measures of what they had learned (data from pre- and post-tests, work samples, and observations of practice over time). Finally, we wanted to know what our candidates did after they left STEP—whether they entered and stayed in teaching and what kinds of practices they engaged in (data from graduate surveys, augmented with data from employers and direct observations of practice).

Strengths and Weaknesses

An obvious goal for evaluations of program outcomes is to identify areas where it appears the program is succeeding more and less well. By using different strategies we could triangulate data from several sources to look for patterns in responses. Graduates reported that they felt “well prepared” or “very well prepared” for teaching (an average rating of 4.06 on a 5.0 scale), a significantly higher rating than a national random sample of beginning teachers (Darling-Hammond, Eiler, & Marcus, 2002). Looking across several measures, we found multiple confirmations that candidates felt especially well prepared in terms of planning and organizing curriculum in their subject matter and using a wide repertoire of teaching and assessment strategies adapted to student needs; that their supervisors saw substantial growth in these areas in terms of practice over the course of the year (Lotan & Marcus, 2002); and that test measures recorded growth in knowledge about these areas (Shultz, 2002). When compared to a national sample of beginning teachers, these were areas in which the program also appeared significantly stronger than the norm (Darling-Hammond, Eiler, & Marcus, 2002).

We noted that areas in which the program appeared relatively strong compared to other programs were not always areas in which we were fully satisfied. For example, even though 90% of STEP graduates reported feeling adequately prepared to teach English language learners (as compared to 50% of a national random sample of beginning teachers), fewer students felt “very well” prepared in this than in some other areas, and our more in-depth examination of the California Language and Academic Development strand of courses and students’ views (Bikle & Bunch, 2002) helped us to parse out which areas of their preparation were stronger (e.g. preparation to address diverse cultures and to support access to disciplinary content using sheltered techniques) and which were relatively weaker (e.g. preparation to teach English language skills to new English language learners).

We found some other areas where graduates felt somewhat less well-prepared. On our graduates’ survey, fewer than 80% of graduates (proportions ranging from 73 to 79%) felt adequately prepared to identify and address special

learning needs or difficulties, to work with parents, to use technology in the classroom, to create interdisciplinary curriculum, to resolve interpersonal conflict, and to assume leadership responsibilities in their school. Some of these are areas where teacher education programs have generally received lower ratings from their graduates (e.g. special education, technology use). Others are areas where a secondary program heavily focused on content pedagogy does less work than many elementary programs or those with a different orientation (e.g. creating interdisciplinary curriculum).

Making sense of these findings in program terms required triangulation with other data and an examination of trends over time, as described below. In at least some cases, these survey responses reinforced candidates’ responses on the Test of Teaching Knowledge where their pre- and post-test score gains were very strong in some areas, like analysis of and planning for curriculum and teaching strategies, as well as understanding of adolescent development, while their responses were partial in other areas, like responding to students’ special needs. In this latter area, they showed increased understanding of the content addressed in the question, but some could not describe how they would apply their understanding about the learner to instructional practices (Shultz, 2002). We used these data to consider and design ongoing program reforms.

Effects of Program Reforms

One of the goals of the research was to uncover whether there were changes in candidates’ learning over the three years that a number of program reforms were implemented. By collecting surveys from 4 years of program graduates we were able to examine whether there were changes in their views of certain aspects of the program over time. While there were not significant differences over time in most areas, there were some areas where program changes seemed to have made a large difference in graduates’ feelings of preparedness. Some of these were positive and others were less so. On the one hand, the introduction of much more explicit work on how to use technology in the classroom, how to work with parents, and how to address special needs of exceptional students appeared to result in large increases in the proportions of graduates feeling adequately prepared in

these domains—exceeding 80% in each category by 2000 (Darling-Hammond, Eiler, & Marcus, 2002).

On the other hand, a sharp drop in candidates' felt readiness to create interdisciplinary curriculum could also be attributed to program reforms. As efforts were made to tie courses more tightly together and streamline the curriculum to allow for the introduction of new content, a course that had earlier required an interdisciplinary curriculum project revised its requirements to allow students to use their discipline-based curriculum unit as the site for embedding required groupwork tasks. Thus, fewer students had the experience of constructing interdisciplinary curriculum. As in many program decisions, the faculty now needs to consider the trade-offs among competing goals for a one-year teacher education program and decide which values should guide a decision about whether or how to rethink the curriculum.

Another change—the infusion of strategies for teaching culturally and linguistically diverse students as a core part of the program design—increased the exposure many students received to this knowledge and skill base but may have sacrificed some depth in the area of English language development. That and the change in California outlawing bilingual education put a previous course on Bilingual Education into an odd position in the curriculum. Data about student perceptions of preparedness allow the faculty to plan the ongoing redesign of this component in light of what students feel they know and can do and where they wish they knew still more.

New initiatives to infuse case methods into teacher education courses were found to improve student satisfaction with their learning in these courses and to result in observable learning gains. The introduction of an adolescent case study in the course on Adolescent Development sharply improved course ratings and students' understanding of how adolescents develop within cultural, community, and school contexts, as well as greater commitment to reaching and supporting students in a variety of ways (Roeser, 2002). The refinement of pedagogy for developing a curriculum case in the course on Principles of Learning for Teaching resulted in students developing more expert thinking about teaching and learning dilemmas,

as well as a greater capacity to use research and theory about learning to guide classroom decisions (Hammerness, Darling-Hammond, and Shulman, 2002).

Other Kinds of Outcomes

From a study of what already-experienced teachers felt they learned from entering this pre-service program, we learned some interesting things about the value that formal teacher education may add to the learning teachers feel they can get from experience alone (Kunzman, 2002). These teachers found that, in particular, they learned how to conceptualize and plan curriculum, recognize and work with struggling students, collaborate with other teachers, reflect productively on their practice in order to adjust and improve their plans, and use a theoretical framework for teaching as a way of making sense of classroom events. These were domains of practice that they felt they had not learned from their previous unguided experience in teaching. An analysis that tied this perceived learning back to specific courses and program experiences helped us to understand how specific aspects of the program were working for these students. Discovering how much they valued certain kinds of learning opportunities encouraged us to maintain and expand certain components as we consider annual program changes. It has also clarified our thinking about how to educate already experienced teachers in a pre-service program—a phenomenon that is more common in California than in other parts of the country.

In terms of other outcomes, we were interested to learn about the career paths of our graduates and pleased to discover that almost all continued to hold teaching or other education positions, most in very diverse schools, and that many had taken on leadership roles. Graduates who had been teaching longer reported that they felt more prepared to take on leadership roles. We suspect this is a function of experience as much as preparation and hope to find out more about this in follow-up studies. We also want to pursue questions about the practices graduates engage in. While 80% or more reported engaging in practices we would view as compatible with the goals of the program, there was more variability in certain practices, such as using research to make decisions, involving students in goal-setting, and

involving parents. We found that the use of these and other teaching practices is highly correlated with teachers' sense of preparedness. Teachers who felt most prepared were most likely to adjust teaching based on student progress and learning styles, to use research in making decisions, and to have students set some of their own learning goals and assess their own work (Darling-Hammond, Eiler, & Marcus, 2002).

Equally interesting was the fact that graduates who felt better prepared were significantly more likely to feel highly efficacious—to believe they were making a difference and could have more effect on student learning than peers, home environment, or other factors. Although we found no relationship between the type of school a graduate taught in and the extent to which s/he felt efficacious or well-prepared, there are many important questions to be pursued about the extent to which practices and feelings of efficacy are related to aspects of the preparation experience and aspects of the z

Finally, a systematic analysis of the practices of 10 STEP graduates, using multiple interviews, classroom observations analyzed through a detailed protocol, artifacts of teaching (e.g. lesson and unit plans), and student work was able to trace elements of the STEP vision—concern for student learning; content pedagogical strategies; commitment to equity; capacity to reflect; and commitment to change and reform—not only into STEP teachers' opportunities to learn but also through to STEP graduates' practices (Hammerness, 2002). Strong evidence of concern for student learning, commitment to equity, and use of content pedagogical strategies supportive of deep understanding was readily apparent and frequent in STEP teachers' classrooms across subject matter areas. While most STEP graduates were able to reflect on their practice to change and improve their instruction, the tendency to reflect was not universal, creating questions about how to ensure that this becomes habitual for all candidates. And a finding that a minority of STEP graduates took leadership roles in their first year of practice was consistent with findings from the survey that recent graduates feel less prepared in assuming leadership roles than in enacting other aspects of their teaching roles (Darling-Hammond, Eiler, & Marcus, 2002).

Most gratifying in these studies were the kinds of comments graduates made about their preparation to teach, with large numbers offering comments like the following:

I felt so prepared going into September. Well, actually I was pretty nervous in September, [but by] October I think I realized I was prepared. I knew I had to constantly be thinking about the bigger picture for my students and what goals are there...and I don't think I would have thought about that without STEP. I would have just gone day to day to day and then wherever I was in June—that's just where I was. —Julie, STEP '99

I'm really, really, really really, glad that I did not just wing it in teaching by myself. I feel like it set me ahead five years of where I would have been...Really it's better for everybody; it's better for my students, better for me that I didn't have to go through [difficult years without training] because I'm a much more effective teacher for my students ... [So] you can wing teaching...however, the quality of teaching is like night and day between somebody who is well-trained and has experience...and I think that makes a difference for the students, too. —Lindsey, STEP '00

Despite longstanding evidence that novice teachers often experience "reality shock" (Veenman, 1984) and that teachers struggle to put the ideas from their teacher education programs into practice, this research suggests that new graduates can engage in practices that are consistent with what they learned in their teacher education program, including practices that experienced teachers have said they did *not* learn through classroom experience alone (Kunzman, 2002).

Conclusion: Continuing Challenges

Despite the many positive changes that have been made in the program, STEP faces continuing challenges. While the redesigned curriculum has enabled student teachers to engage with many concepts, problems, and issues that underlie powerful teaching, there are areas in which the tightly

packed curriculum has not been able to give sufficient attention to matters that are central to the STEP vision. For instance, while many courses spend some time on assessment, a full course on that topic would be extremely useful for STEP students. Efforts are currently underway to create such a course. At the same time, creating an appropriate balance between curriculum demands and time for experience and reflection is a challenge. Even as the knowledge and skills needed for effective teaching and the requirements for credentialing become more intense every year, student teachers need time to engage in the kind of learning STEP wishes to support. A program that is too tightly packed can also inhibit reflective learning.

Thus, STEP is now evolving into two separate, but interlocking pathways: 1) A “co-term” program that formally admits a cohort of Stanford undergraduates in their junior year. These students will progress through 3 years of blended study of content and pedagogy (junior year, senior year and post-baccalaureate year) to receive their master’s degree and credential after their fifth year of college. This pathway will include about half of the secondary candidates in STEP and all of the candidates in a new elementary program; and 2) A two-year post-baccalaureate program, whose students will receive their credential after one year, and who will take additional courses part-time during a second year while they are salaried teachers in nearby school systems. These post-baccalaureate students will gain access to additional coursework and mentoring as they complete a customized version of the state-required beginning teacher portfolio, which will build directly upon the new PACT portfolio they will have completed in the preservice year.

Challenges such as these are plentiful, complex and continuing. Redesigning teacher education to meet both its long-standing challenges and the new demands that face teachers is, truly, steady work. Like others of our colleagues across the country, we are satisfied that this work is never completed, but that the process of learning to teach—for ourselves as well as our students—will be a lifelong endeavor.

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