

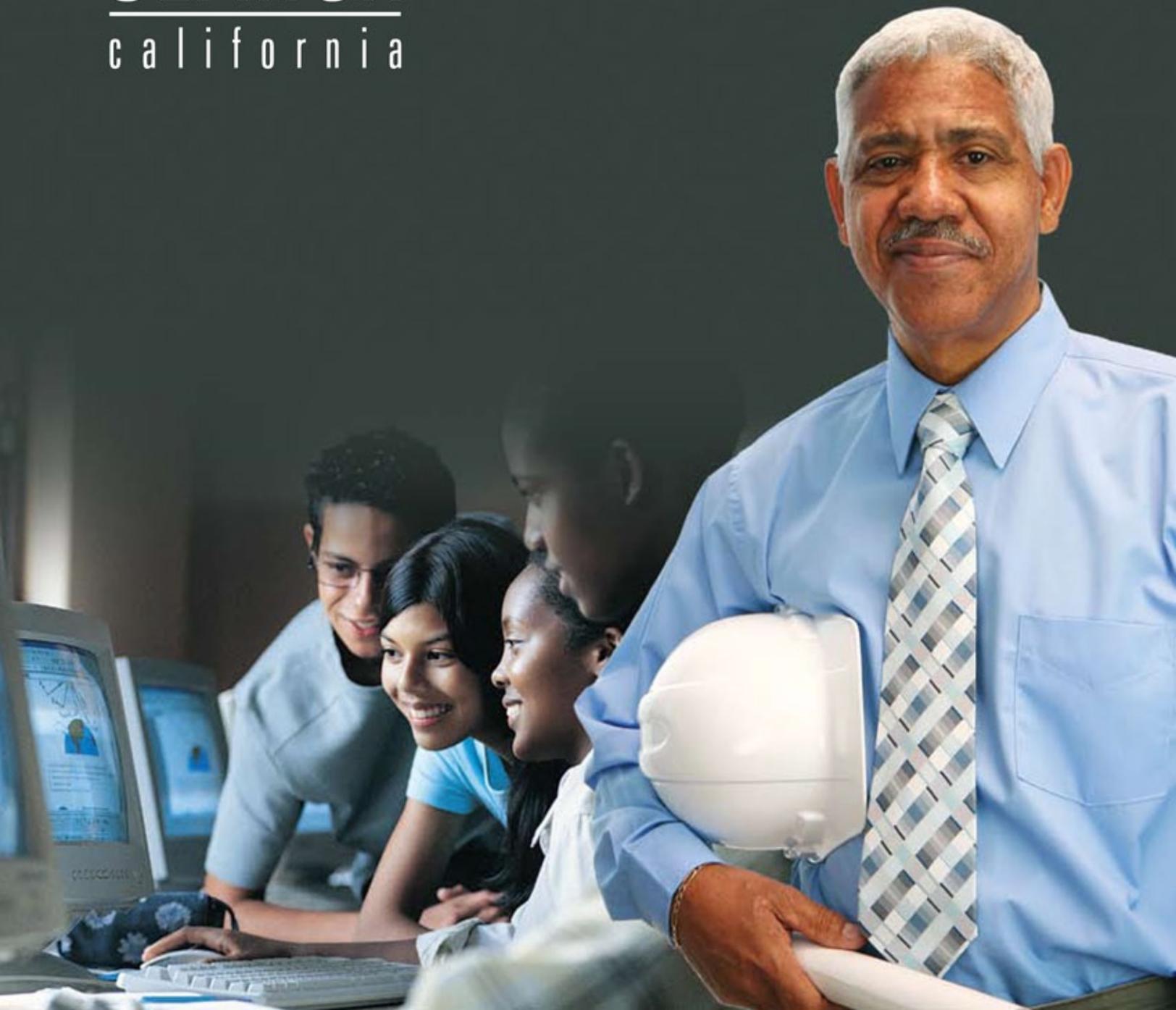


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SEARCH
california

Transition to Teaching

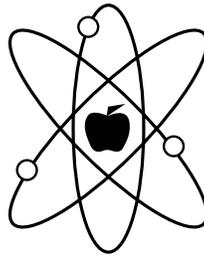


STEM TRANSITION TO TEACHER PROGRAMS REVIEWED

The Scientists and Engineers-Alternative Routes to Certification and Hiring (SEARCH) program was a three-year pilot program to study ways to attract career changing industry professionals to become public school science, technology, engineering and math (STEM) teachers. It was funded by a U.S. Department of Labor grant and provided counseling to individuals desiring to change careers from technical industry to teaching. This report examines lessons learned in the pilot program.

EnCorps was created in June 2007 as a public-private partnership launched with Governor Arnold Schwarzenegger and the Sherry Lansing Foundation. The program is designed to recruit late career changers and retirees from STEM fields to become math and science teachers. The lessons learned from the initial year of this program contribute to the understanding of an examination of SEARCH results. Consequently, this report was produced jointly by SEARCH and EnCorps to study the experiences of programs established to attract more STEM teachers from industry professionals.

SCIENTISTS & ENGINEERS ALTERNATIVE ROUTES TO CERTIFICATION & HIRING



SEARCH
california

TRANSITION TO TEACHING STUDY

November 30, 2008

EnCorps

ENCORPS, CALIFORNIA



**U.S. Department
of Labor**

CALIFORNIA



**SPACE
AUTHORITY**

PROJECT PIPELINE

PROVIDING CALIFORNIA TEACHERS



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EXECUTIVE SUMMARY

The Need.

California's economy is dependent on industries including manufacturing, technology, innovation, and research. The 77 million Baby Boomers are starting to retire and the number of engineers, scientists and technical entrepreneurs is decreasing. Yet the number of teachers in science, technology, engineering and math (STEM) subject areas is shrinking while the need for more is growing. Many have estimated that in the next 10 years California might face a shortage of 33,000 math and science teachers.

According to a representative of the California Commission on Teacher Credentialing, "If every math major in every California college who graduates this year were to immediately become a math teacher, we will still be short by nearly 30% the number of new math teachers we need this year."

So, if our colleges cannot produce enough new STEM teachers, then where will they be found? One answer is in the technical professionals leaving industry and seeking another career.

The Market.

A review of the pilot phases of SEARCH and EnCorps point to a clearer picture of the profile of these industry professionals who have an interest in "giving back" by becoming school teachers. A survey of applicants from EnCorps and SEARCH found—

- 52% have already retired
- An overwhelming majority are male (70%)
- The fields with the greatest number of applicants are Computers and Technology, Aerospace, Education and Health Policy
- Passion for the subject matter is a major motivation to enter teaching
- There is a strong desire to "make a difference" via an encore career

The Challenges.

Both SEARCH and EnCorps were created to assist the career changing professional who desires to enter teaching. During the pilot phase of these projects, challenges—both real and perceived—limited the attractiveness of teaching to those career changers. This report identifies these challenges and reflects on the lessons learned that can inform EnCorps on how to move forward. The challenges include:

- Factor # 1: Overcoming misperceptions about teaching—
 - » Industry professionals don't perceive additional training is necessary to become a professional educator
 - » Industry professionals don't see the value in having to complete a teacher preparation program
- Factor # 2: Recruitment methods for the Baby Boomers generation—
 - » Target market needs one-to-one contact that precludes mass communication efforts to be effective in recruiting current generation of late career changers
 - » Target market spread over entire population and not easily recruited compared to college market
 - » Target market generally requires two or more years of advance research, personal investigation, and preliminary preparation prior to changing careers to education.
- Factor # 3: Constraints with the current education policy environment—
 - » Limited flexibility within districts to hire part-time teachers
 - » Low teacher pay compared with industry standards
- Factor # 4: Constraints with the current economic landscape—
 - » Reduced school budgets with commensurate perceived reduced teacher employment opportunities
 - » More industry professionals need to stay on the job longer to rebuild retirement finances and maintain secure employment until crisis subsides

- Factor # 5: Finding interest in full time positions--
 - » Many applicants not looking for full-time encore career
- Factor # 6: Teacher placement
 - » Hindered by the current hiring policies and procedures in many districts

In conjunction with the challenges above, once teachers enter the classroom, they must reconcile the business culture with the education culture. Business culture rewards perceived hard work with compensation increases and recognition; education culture rewards are in student success.

Lessons Learned.

This study has resulted in six lessons learned for transition programs, and these apply specifically to EnCorps as it targets future STEM subject teachers to be recruited from industry:

- Early recruiting--Communicate early and often the benefits and rewards of teaching; identify potential future teachers at least two years before their planned career change
- High-touch recruitment methods--recruitment should emphasize sustained one-to-one contact

- Diversify options--More pathways for late career changers to assist in raising student achievement in STEM subjects in positions other than as full-time teachers
- Corporate partnerships--Strengthen and expand partnerships with corporations to enhance financial assistance for participants
- School partnerships--Strengthen and expand partnerships with schools to provide definitive transition timelines and increased participant focus
- Increased research--Continue research into this specific profile of late-career changers.

Conclusion.

The long-term competitiveness of California depends upon increasing the number of students currently studying and passing STEM subjects. These goals require more qualified STEM subject teachers. Teachers with real-world experience in the fields of math, engineering and science have the potential to address the shortage of STEM subject teachers and to ignite student interest by sharing how math and science can be used to create and build new worlds—rather than viewing them as dry academic subjects.



INTRODUCTION

EnCorps and SEARCH partnership

This report provides background to the challenges that SEARCH and EnCorps were created to address, as well as captures lessons learned from SEARCH and EnCorps. As the SEARCH pilot program is ending with the termination of the Department of Labor three-year Workforce Innovation in Regional Economic Development (WIRED) grant, a Memorandum of Understanding was completed that folds the SEARCH program into EnCorps. This report uses the lessons learned from both programs to form recommendations regarding how EnCorps can best move forward to recruit late career changers and retirees. EnCorps has the potential to impact thousands of students by recruiting teachers who can inspire the next generation of scientists, engineers, mathematicians, accountants and even math and science teachers. The full potential of the programs remain to be seen and no program that is capable of finding a portion of the 33,000 qualified math and science teachers needed in the next 10-years should be overlooked.

The SEARCH and EnCorps surveys point to a limited but clear market for career changers who want to transition to teaching. Though programs like SEARCH and EnCorps have made the credentialing process more accessible to those interested in teaching, several hurdles remain to make the transition to teaching an attractive, viable option for retirees or those planning to make a significant career change.

A shortage of math and science teachers

California is facing a shortage of qualified math and science teachers that will only continue to grow as teachers retire and attrition rates rise. The California Council on Science and Technology (CCST) and the Center for the Future of Teaching and Learning (CFTL) report that in the next 10 years California may face a shortage of 33,000 qualified math and science teachers¹. The report also found that many current teachers are not fully prepared to teach math and science classes:

- 9% of science teachers and 11% of math teachers in California high schools are teaching out of their credentialed field²
- 9% and 12 % of science and math teachers, respectively are underprepared
- Even larger numbers of new teachers are underprepared³

Retiring professionals—a new market for teacher recruitment

As fewer teachers step up to teach math and science, more channels for teacher recruitment need to be discovered. This challenge comes at the same time that 77 million baby boomers are entering retirement age.

California's retiring engineers, scientists and mathematicians have designed rockets. They've launched companies. They've discovered new technology to change the way we live. So while California faces a shortage of qualified math and science teachers, there is an incredible resource that with investment of effort and time can be tapped. Those that are interested in teaching have subject knowledge, real-world field experience and a proven passion for math and science. With the right outreach and proper training and motivation to earn professional educator credentials, they can contribute positively to math and science education in California schools.

Why Math and Science?

Few students today are excited about math and science. Only 16% of students attaining degrees through the University of California system are inspired to pursue degrees in higher education in math and science⁴. William Butler Yeats once said, "Education is not about filling a pail, but lighting a fire." That fire is ignited by teachers who can bring excitement, passion and relevance to a classroom. Where has the excitement for these subjects gone?

As noted above, one issue facing math and science classrooms is the amount of teachers who are not fully prepared to teach the subject matter. The number of underprepared teachers increases dramatically when examining teachers in their first and second years, as well as in schools serving minority students. As recently as 2001, 60% and 57% of novice middle school science and math teachers, respectively, were underprepared, and 57% of novice high school math and science teachers were underprepared.⁵ Progress has been made to better prepare teachers, but as of 2006, 29% of novice middle school math and science teachers were underprepared and 35% of novice high school science teachers were underprepared along with 40% of novice high school math teachers.⁶ The percentage of underprepared teachers is four times higher in schools with predominantly minority students.⁷

To develop more math and science majors, students must engage with math and science in high school. CCST and CFTL found that the number of math and science classes a student takes in high school have a significant impact on whether a student pursues a STEM degree. A 1997 survey of college students who left STEM fields found that 40% cited the lack of necessary preparation received in their high school courses as a primary reason for dropping out of the major.⁸

On a very practical level, if California does not increase the number of math and science graduates, it will face a competitive disadvantage in the future. In April 2008 the California Space Education and Workforce Institute (CSWEI) reported that there would be an increase of 51% of jobs requiring science, engineering and technical training in 2008, and up to six million new jobs could be created nationally.⁹ Even with the recent downturn in the economy negatively affecting the job market, California's future workforce is not prepared to fill future math and science jobs. California is in the third lowest quartile of states conferring bachelor's degrees in STEM fields in the 18-24 year old population.¹⁰ Though California is at the heart of the high-tech industry, a recent analysis-before the economic downturn- projected that personal income per capita in California from 2000-2020 will decrease by 11%, leaving California last in the 50 states in the amount of projected change in per-capita income.¹¹ This, in part, reflects the failure of California to produce qualified workers necessary to keep higher paying technical jobs in the state.

The Original Premise of SEARCH and EnCorps

Reaching Mid-Career Changers

There are a handful of teacher preparation programs that have successfully transitioned professionals from their current career field into the classroom. One of the largest transition programs has been Troops to Teachers. This U.S. Department of Education program provides counseling and financial assistance to long-serving military members who desire to enter public school teaching as their next career. Since 1994, Troops to Teachers has placed over 11,000 experienced veterans as new public schools. A majority of these career changers are teaching math, science and special education in economically disadvantaged schools.

"The federal government isn't usually known as a hotbed of innovation, but Troops to Teachers has become a model for matching untapped resources with unmet needs. Such models have become even more important with 77 million baby boomers beginning to reach retirement age and a growing national need for teachers. In May [2007,] Troops to Teachers won a BreakThrough Award from the MetLife Foundation and Civic Ventures as an organization providing meaningful public interest jobs for people over 50."¹²

Using Troops to Teachers as a model, in 2006 the SEARCH program was created as part of an initial round of Department of Labor WIRED grants. SEARCH was created to attract more math, science and technical career education teachers to public schools by establishing a program that assists engineers, technicians and scientists who are leaving aerospace and defense industries, to make a career change into teaching. Participants receive advice on certification programs that can get them into teaching as quickly as possible, finding financial aid and employment.

The goal of the SEARCH pilot program was to determine if there truly is a valid market for new public school teachers in the pool of career changing scientists, engineers, mathematicians and technicians. The hypothesis was that if a clearly defined, streamlined and customized path to teaching was created for this market, more people would become teachers and help alleviate the serious shortage of math and science teachers in California. These experienced engineers, scientists and technicians could bring to the classroom real-world applications of academic theories that would excite many students who previously viewed the subjects as dry, boring and irrelevant.

The limitations of SEARCH were clear from the beginning. As with any initial model, the anticipated number of new teachers was limited due to the need to develop new processes and create effective outreach activities where none existed.

Reaching Late-Career Changers and Retirees

EnCorps was created in June 2007. EnCorps is a public-private partnership launched with Governor Arnold Schwarzenegger and the Sherry Lansing Foundation. The program is designed to recruit retirees from STEM fields to become math and science teachers. EnCorps currently partners with corporations such as Edision International and IBM to recruit and provide

financial assistance to participants obtaining their credentials. EnCorps currently provides support including test-prep books for the California Subject Examinations for Teachers (CSET), assistance with school placement, scholarships for credentialing programs, online mentorship and workshops to assist with the transition from the corporate world to teaching. Teachers are introduced to schools that have support programs for new teachers and serve low-income communities. EnCorp was inspired by IBM's Transition to Teaching program through which IBM employees with a background in STEM fields can earn a K-12 teaching credential. Nearly 100 IBM employers started in the process of becoming a teacher in the first year of the program. Like the IBM program, EnCorps provides up to \$15,000 to cover costs of credentialing programs and provides online mentoring to the new teachers

In the pilot year, EnCorps focused on recruiting in California, primarily in the San Francisco Bay Area, Los Angeles and San Diego areas. The program hopes to be a model for other states that are facing similar math and science teacher shortages.

What Makes a Qualified Teacher?

EnCorps and SEARCH California are committed to finding candidates who have the background and motivation to become qualified teachers. No Child Left Behind defines a qualified teacher as having a full-state certification, a bachelor's degree and demonstrated competence in academic subjects that they teach. Yet beyond these basic requirements, what makes a person qualified for a classroom?

In California, there are several pre-requisites in addition to those established in the No Child Left Behind Act:

- Satisfy the basic skills requirement by passing the California Basic Education Skills Test (CBEST)
- Verify subject matter competence by one of the following methods:
 - » Achieve a passing score on the appropriate subject-matter examination(s), which is called the California State Examination for Teachers (CSET)
 - » Complete an approved subject-matter program or its equivalent and obtain verification completion from the authorized person in the education department of a California college or university with an approved program

- Complete a single subject teacher preparation program including successful student teaching, and obtain a formal recommendation for the credential by the California college or university where the program was completed
- Evidence U.S Constitutional knowledge
- Meet high standards of personal character
- Achieve Cross-cultural Language and Academic Development (CLAD) certification

For programs like SEARCH and EnCorps, professionals can enroll in intern credential programs, which allow for teachers to take 120 classroom hours of study or "pre-service" training and then begin credentialing and teaching. During their first two years teaching, they complete the necessary credentialing program coursework on a part-time basis. Upon successful completion of this intern program which includes all professional education coursework, they earn their preliminary teaching credential. Through these programs, career changer can achieve "full preparation." CCST and CFTL define a "fully prepared" math and science teacher as one who is credentialed and teaching courses in which they are certified and hired¹³.

However, another important aspect of STEM professionals transitioning to teaching that remains to be seen is if these teachers are successful at raising student achievement. Will career changers not only foster excitement for math and science, but also raise student achievement?

With the ultimate goal of raising student achievement, more research needs to be done to see if career changing teachers who are by definition "fully prepared" are increasing student math scores and encouraging more students to enroll—and pass—both their math and science classes. With EnCorps and SEARCH still in the early phases, this will not be fully addressed in this report.

Who really is interested in being a teacher?

Civic Ventures reports that as many as 8.4 million, or 9.5% of people ages 44-70 are interested in continuing to work beyond the typical retirement age in a new profession that has a social impact¹⁴. Thirty percent of those in second careers, or "encore" careers are working in education¹⁵. For those interested in an encore career, 31% thought they would find teaching "very appealing."¹⁶ Bringing math and science

professionals into the classroom would not just fill the growing need for qualified teachers, but could also bring new level of excitement, relevance and expertise to math and science departments in school districts across California.

To understand more clearly the specific profile that is interested in teaching math or science, EnCorps and SEARCH California surveyed their applicants and those accepted into the program.

Who are the people currently applying to transition to teaching?

- Over 50% of applicants have already retired
- An overwhelming majority are male (over 70%)
- The fields with the greatest number of applicants are Computers and Technology, Aerospace, Education and Health Policy
- Most heard about the program through a friend, an employer or the internet

What are their motivations?

SEARCH and EnCorps applicants were both drawn to teaching for the same reason—to make a difference in their community. This is aligned with the Civic Ventures study which found that two-thirds of people interested in encore careers think it is important to use their skills to help others.¹⁷ According to one EnCorps candidate, “I see the need for math and science teachers in the public school system and I have the background in these fields ...I want to do something helpful after retiring.”

Other survey findings include--

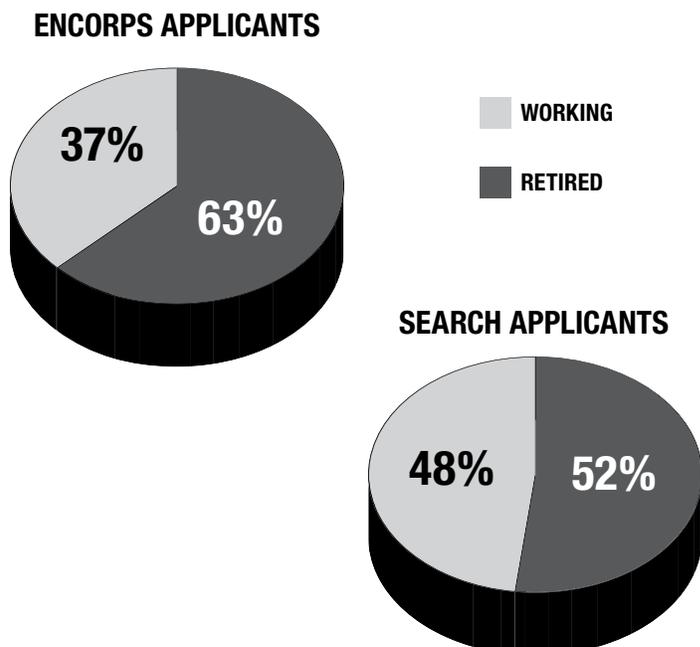
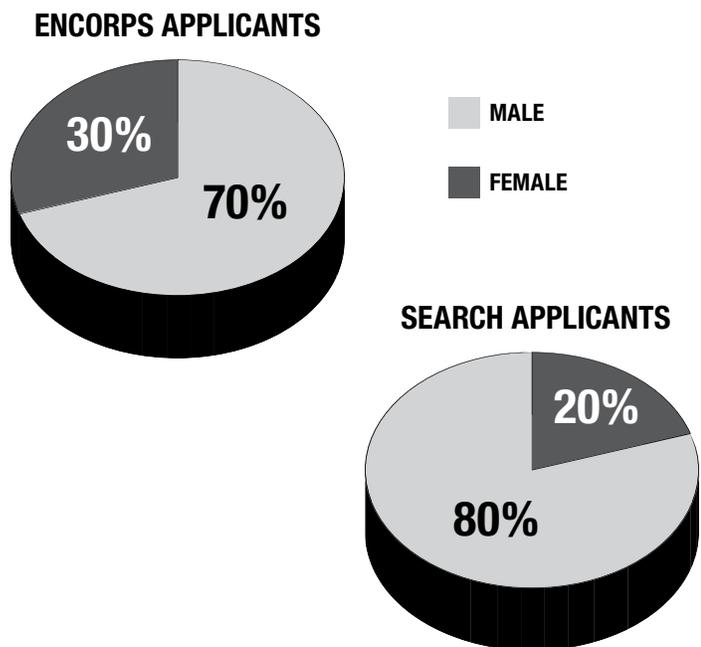
- The need for supplemental income was the least strong motivation across all categories
- Passion for the subject matter was less of a driver for EnCorps applicants (49%) than it was for SEARCH applicants (77.8%)
- The second most common reason for *applying* was because they were curious about the potential of a teaching career

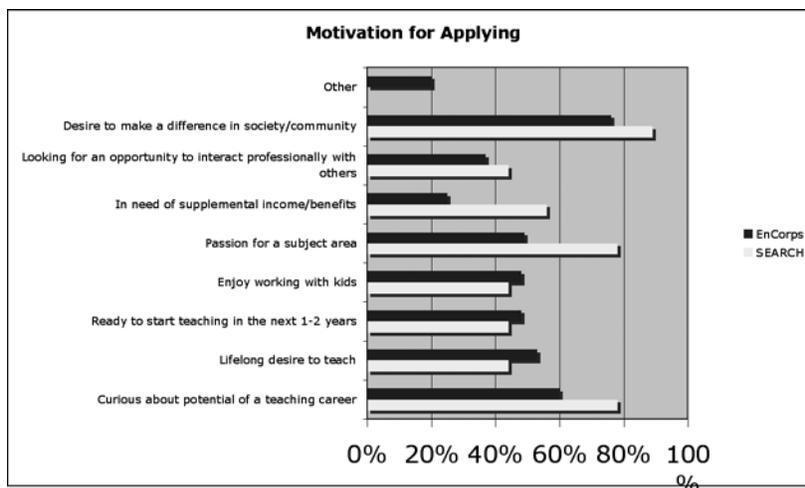
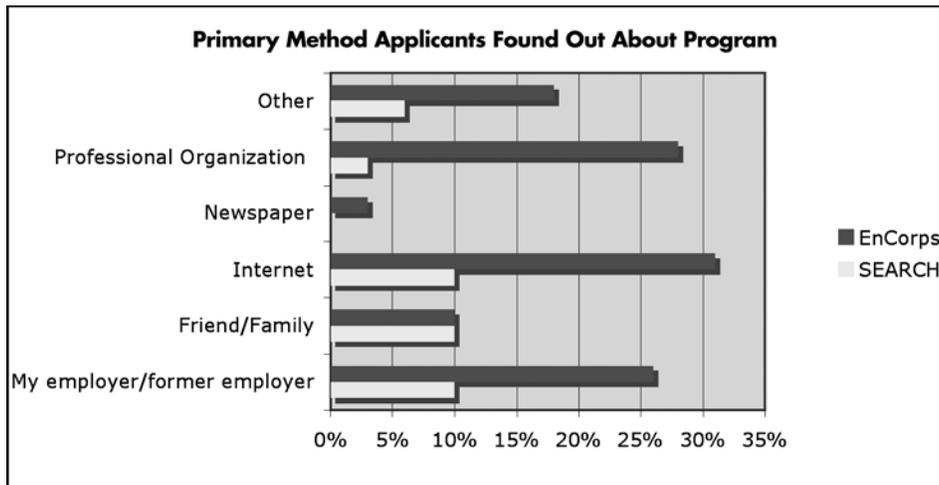
While it is not clear how the economy will impact this, it is interesting to note that supplemental income isn't a driver, but it may be a constraint.

Methodology

The data for this report was gathered by an online questionnaire designed by EnCorps and SEARCH with the support of Apollo Philanthropy. The questions were tailored for specific subgroups and divided into different surveys reaching these categories:

- SEARCH candidates
- EnCorps accepted applicants
- EnCorps applicants who submitted their application
- EnCorps applicants who were interviewed
- EnCorps candidates still in the process of completing the application





A total of 101 responses were collected out of 425 candidates who were contacted. The responses represent a subset of each of these categories and provide preliminary data on the specific market of STEM professionals transitioning, or considering transitioning to teaching math and science.

In addition, Apollo Philanthropy conducted phone interviews with various individuals from organizations relevant to the work of EnCorps. The individuals fall into these subcategories:

- EnCorps Candidates
- Active EnCorps partners
- Corporate Perspective
- Retiree Transition Perspectives
- Broader Education Perspectives
- Foundations

WHAT WE KNOW: Factors Impacting Recruiting

At all points in the process—from the recruitment stage to full participation in a transition program and eventual school placement of teachers, the pilot phases of EnCorps and SEARCH reveal that several factors impact the transition from industry to teaching. Professionals show interest in transition to teaching programs. Yet the length of time between a candidate’s initial curiosity for teaching and when they actually become a teacher is long. Candidates require nurturing excitement about teaching in a different manner from other recruitment programs aimed at younger generations.

Factor #1: Need to overcome perceptions of teaching in the Baby Boomer generation

For many professionals who have been in the workforce for decades, the amount of preparation required to transition to teaching can be daunting. Many have not taken standardized tests like the CSET since the beginning of their careers. One perspective from a professional that works with transitioning retirees suggests that programs should “offer the retiree population an easy path to reentering the workforce and make certain they understand their past experiences will be valued and an integral component of their new work. No one at this age wants to start over.”

Additionally, the survey responses suggest that there is a misperception among professionals from STEM fields—many of whom are unfamiliar with the education profession—about the amount of training that good teachers require. According to one education professional, “The career changers that came to us thought they were highly qualified and they should not be required to pass the ‘gates.’” The gates, such as the CBEST and the CSET are seen as superfluous in light of the expertise gained from years working in the industry.

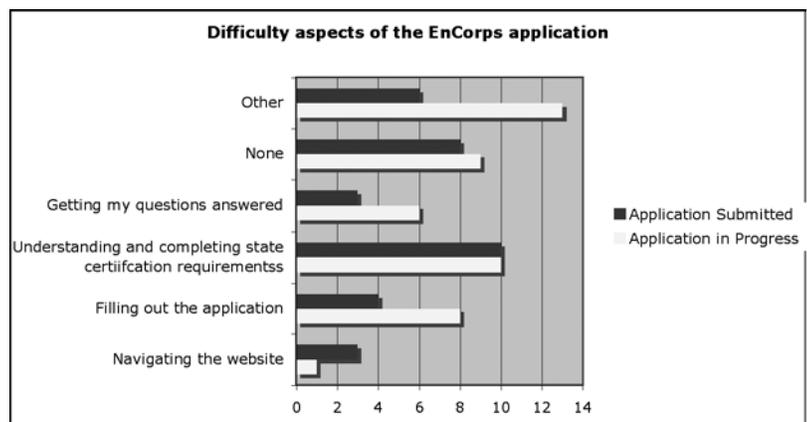
For example, the survey found-

- Of those that didn’t finish the EnCorps application, 55% answered that there were “too many hoops to become a teacher”
- Over 50% of SEARCH respondents cited the “extensive prerequisites demanded by the state” as impacting their decision about whether or not to become a teacher
- 57% of SEARCH respondents who had hesitations about teaching because of perceived obstacles said they felt their experience wasn’t valued

EnCorps and SEARCH both provide assistance to walk professionals through the process of becoming a teacher in California, as the requirements can be confusing. Even with this support candidates still find the process unclear and the tests difficult. One EnCorps candidate wrote, “Most professionals don’t know anything about the educational system, the requirements, the testing, etc. Therefore, instructions to become a teacher must be concise and written for non teachers.” The steps to become a teacher require that professionals adapt to a whole new culture, filled with unfamiliar language, processes and politics.

Applicants who come into the EnCorps or SEARCH program with commitment to teaching seemed to have a better chance of completing the entire process. Four out of ten of accepted EnCorps applicants had successfully passed the CBEST before applying. Of those that started the process, but have not completed the process, only 20% had passed the CBEST.

For a professional expecting to transition quickly and smoothly into teaching, the process can be jarring. Professionals seemed to underestimate the amount of time and effort required to make the transition. Out of all the EnCorps teachers in the first year, none were



able to pass all parts of the CSET the first time. All had to put in significant amount of time to study for the test. In fact, seventy-five percent of applicants accepted into the EnCorps program found passing the CBEST and CSET exams difficult.

The most difficult step in the process to become a teacher for those still applying to either program, is understanding and completing state certification requirements. Even among EnCorps participants who had not taken the CSET or the CBEST, 40% perceived passing the CBEST and the CSET as difficult. Approximately one-third of SEARCH candidates also found the CBEST and CSET exams to be difficult. Additionally, finding the time to complete the state requirements was a difficult task for 56% of respondents.

When asked how support could be improved:

- Over half of the EnCorps respondents said they would like additional CSET and CBEST training
- Forty-four percent of SEARCH applicants also desired CSET and CBEST training

SEARCH does not provide direct study materials for either test, but refers candidates to commercially available options found on the Internet. About 40% of applicants wanted more information about becoming a teacher, perhaps suggesting that the current methods of test support should be expanded. Currently, EnCorps does not offer any CBEST support and provides CSET study materials for those accepted into the program. About 40% of applicants wanted more information about becoming a teacher, perhaps suggesting that these current methods of test support also should be expanded.

Subject Competency vs. Teaching

Part of the misconception of what it takes to be a teacher lies in the distinction of being highly knowledgeable about what is being taught and being highly knowledgeable about how to *teach* in K-12. An EnCorps candidate said, “Why do you have to certify anyone who has life experience and years working in the field? Most industry professionals I know would be better teachers than what we now have!” Though all professionals have watched their teachers explain Algebra, Science, Physics, Chemistry, etc., many are unaware of the intense technique that goes into standing in front of a classroom and communicating these concepts clearly. As one education expert put it, “Retirees know the content but not how to teach. Classroom management is a big issue.”

Is it really that hard to qualify to teach in California?

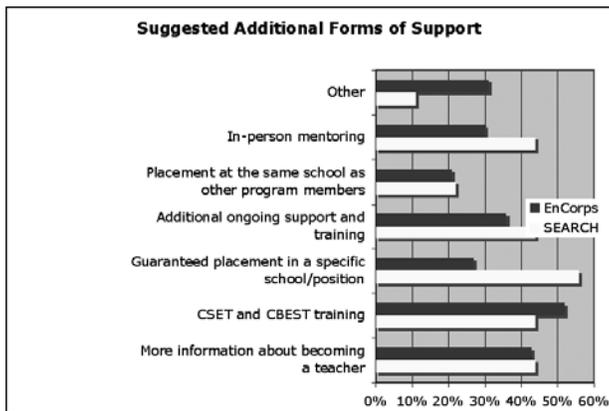
A common complaint of STEM professionals is that the state makes it “too hard” to become qualified to teach. In reality, most engineering and science professionals have the background sufficient to meet most of the prerequisites to enter the classroom as full-time, paid teachers with only the following three steps to be completed:

- pass a basic education skills test that covers reading, writing, and arithmetic at the 10th grade level and below (CBEST)
- pass a subject matter test in the area they want to teach to ensure they know enough about the subject to teach it (CSET)
- complete a minimum of 120 classroom hours (as little as three weeks of full-time study) of pre-service training so they know the basics about lesson planning, education law, effective teaching techniques and classroom management.

These steps will get career changers into the classroom as full-time teachers undergoing an Intern program. Then the argument that the state has created “too many hoops to jump through” fades dramatically! Interns quickly realize that they are in desperate need of much greater professional development if they are to be truly effective teachers! This additional professional growth is gained through required after-hours part-time study over the next two years while they teach during the school day. The Intern will complete a state approved program of formal coursework in pedagogy. Options available in California to complete this coursework include weeknight classes, on-line courses, and weekend study.

Although the Intern program is the most common option of accelerated entry into the teaching profession, there are others that can be even faster. These options apply to unique and infrequent situations, but they further debunk the notion that unreasonable demands are made by the state to prevent talented, qualified and motivated individuals from entering the classroom quickly.

The challenge in career changing transition programs is to understand the potential new teacher market and offer long-term guidance, encouraging support and financial assistance to overcome this perception that it is “too hard” to enter teaching.



Factor # 2: Tailor recruitment strategies to Baby Boomers

Given these perceptions, the level of support that SEARCH and EnCorps provide is designed to help applicants navigate their way in a new field. The basic structure of support is strong, but due to the limited capacity in both organizations, more can be done to strengthen the support.

What is working

The processes that worked well for EnCorps were—

- The overall layout and ease of use of the website. Over half of respondents found it helpful. About half responded that the content was helpful in their decision making process.
- The application layout and ease of use. Nearly 95% of respondents said the application process or interview was helpful as they considered pursuing a teaching career.

The processes that worked well for SEARCH include—

- The one to one preparation provided by a SEARCH representative (60% found this helpful)
- The website and SEARCH literature

Though these structures appeared to work well for those who knew about them, significant portions of respondents did not receive support from these or other available resources. One hypothesis is that they didn't know that this support existed and therefore did not take advantage of it.

High-Touch Recruiting

Interviews with professionals in the education field and those who work with volunteers suggest the target generation responds to one to one recruiting. While

Internet and e-mail campaigns are more efficient, require fewer resources and are attractive to younger generations, they will not yield the desired return with transitioning career professionals as more traditional, high touch events. One expert in retiree engagement noted, "In terms of recruitment, 50+ candidates are far slower in the process. They take two to three years to decide whether or not to join and they call and request assistance four to five times the amount as our younger candidates."

SEARCH's recruiting has been based primarily on in-person presentations accompanied by individual one-to-one counseling. Survey results indicate that this approach is well received. However, the success of this approach is closely tied to extensive personnel resource investment and relies heavily on access to industry partners. As discussed later in this report, the ability to obtain in-person contact can be a challenge because of the dispersed placement of retirees.

Community events, direct-mail and one-to-one support are the most effective forms of outreach and support for late career changers and retirees. One professional who works with retirees noted, "We understand the value of the one-on-one recruitment strategies. It is the only way to get individuals motivated and invested to the point where they act on their beliefs. It requires a great deal more attention, but it is worth it in the end."

Recruitment Takes Time

Though more research needs to be done, perhaps one reason that misperceptions persist is a result of outreach methods that are not tailored to late career changers and retirees. Other organizations that work with late career changers have found that the process of recruiting can take much longer than usual for other age groups. Late career changers and retirees generally have homes, families and fixed incomes that must be considered in big decisions. One expert from a retiree transition program said, "We host a great deal of events and now we know that an event will not produce someone in our office the next day, but two to three years later, they become a volunteer. This is just part of the process with retirees. There are no quick decisions and there has to be a great deal of reassurances."

Among EnCorps applicants responding to the survey, 48% were currently working and 34% stated they were looking to begin teaching in one to two years. This suggests that retiree to teacher programs need

to engage people over a longer period of time and continue providing high-touch events to keep people informed as they thoughtfully consider a second career in teaching.

Unlike recruitment programs such as Teach for America--a teaching program for recent college graduates--that can go onto college campuses where there are concentrated pools of applicants, late career changers are spread out and therefore more difficult to find. "Our numbers indicate that there is a large population out there that is interested in becoming teachers, it is just difficult to recruit the dispersed 50+ demographic," according to another retiree expert.

Factor # 3: Constraints with the current policy environment

EnCorps and SEARCH California have worked to make teaching more accessible to those interested in teaching. Survey responses and regular interaction from candidates by both programs reveal that professionals have little doubt that there is a huge need in schools for more math and science teachers. But policy constraints limit much of what can be done to make teaching more attractive to retiring professionals. Constraints include:

- Similar credentialing requirements for all teachers, despite previous experience in the field
- Schools are primarily looking for full-time teachers, not part-time, although 55% of applicants want to start out working part-time

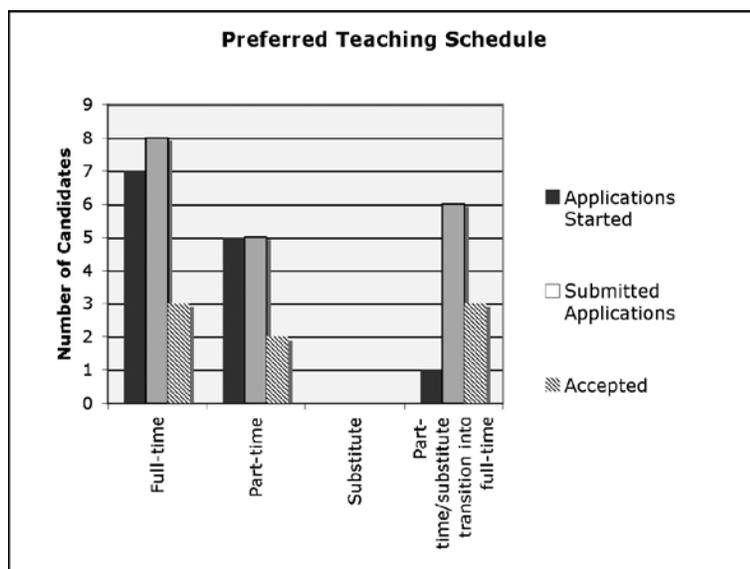
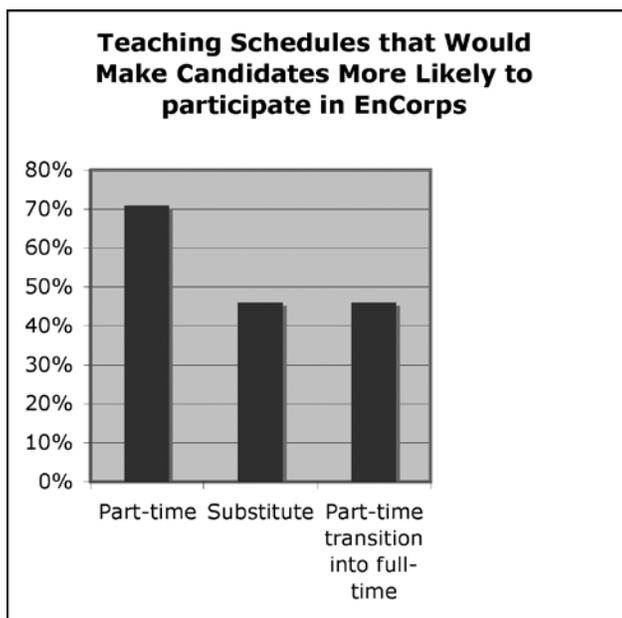
- Teachers receive low pay compared to industry professional salaries

Requirements that are less relevant for a career changer to become a teacher

While EnCorps and SEARCH California can help candidates navigate the process to become a teacher, there are still policies that may not be relevant to a candidate with decades of work experience such as minimum GPA to enter teacher credentialing programs. Given what EnCorps and SEARCH have experience with teacher candidates, until California teacher preparation programs review their entrance requirements to give even more consideration of prior professional experience to individuals desiring to teach STEM subjects, schools will lose out on good teacher candidates.

Lack of flexibility in hiring part-time teachers

A high percentage of late career changers want flexibility in their job, if they are going to have a second career. While full-time teaching contracts are normally for about 183 work-days per year and consequently provide a great amount of time off, it is still a full-time job that requires very long work days. With lesson planning, grading papers, extra tutoring to students who are falling behind and additional duties required of a full-time faculty member such as chaperoning school dances, parent-teacher nights, and faculty meetings, the lifestyle of a full-time teacher may not be attractive to some late career changers. The transitioning STEM subject teacher may want to teach only one to three classes a day.



Multiple surveys validate the idea that work flexibility is key:

- Of the EnCorps applicants that are unsure/ not going to complete the application process, 70% would be more likely to apply if they could teach part-time
- 75% of SEARCH candidates were interested in teaching part-time
- Civic Ventures found 70% of those interested in encore careers and 59% of those currently in encore careers found it very important to have a job that allows them to take time off when needed
- Only 6% of those interested said they would consider going back to work full-time¹⁸

This data suggests if retirees and late-career changers are going to help fill the teacher shortage, school districts need to consider expanding their use and reliance on part-time STEM subject teachers.

The Job Culture Shift and Professional Pay

Industry professionals are used to much higher salaries and are accustomed to a corporate world where there are financial incentives for those who do well in their job. In most corporate cultures, the level of pay is used to measure the importance of the position. It can be a challenge for those leaving corporate America to enter a culture where pay is not directly connected to job performance. It can be a challenge to an industry professional's ego to move from what is perceived as a job of great status (as evidenced by its high level of compensation) to that of a teacher where the relatively low pay may be perceived as indicating the position is not held in very high esteem. Although many career changers want to "make a difference" they must still overcome this cultural paradigm that is prominent in the private sector. As an example, one candidate from the Aerospace industry remains interested in teaching, but after earning \$140,000 for working 4 days a week, he is unsure about starting a new career that is full-time and has significantly less pay. Of the EnCorps candidates who were still applying, 40% said higher pay would increase the likelihood that they would submit their application.

Despite efforts to streamline the process of becoming a teacher, teacher pay will remain a factor and challenge in recruiting professionals from industry to enter the classroom as valued teachers.

Factor # 4: Constraints within the current economic landscape

The current downturn in our economy provides a new challenge for late-career changers and retirees, with the complete effects still unknown. The current economic landscape can have several impacts on teacher recruitment which include

- STEM professionals needing to stay in higher-paying jobs longer due to smaller retirement accounts and fewer financial resources
- Smaller budgets for California schools which could affect teacher hiring
- Perception by new teacher candidates that ALL teaching positions are closed due to budget cuts

Professionals staying in their jobs longer due to the economic downturn

In times of financial crisis, people are less likely to take risks with their careers and switch jobs. In conversations with applicants who have started applications, but not finished, several cited the need to stay in their job longer for financial reasons, or to seek out higher paying alternative jobs. One candidate said, "I am uncertain as to my next steps post retirement. To be honest, with this economy, I have enough on my plate just dealing with the immediate decision of whether or not I even should."

The McKinsey Quarterly recently noted that Baby Boomers will need to work longer because they are unprepared financially and the US and world economies are not ready for the large drop-off in the workforce. "The low savings rate and extensive liabilities of the boomers have left about two-thirds of them unprepared for retirement...This analysis-based on net financial assets such as bank deposits, stocks, and bonds, minus credit card balances, car loans and other non-mortgage debt—indicates that 69% of the boomers are not prepared to maintain their lifestyles."¹⁹

For some retirees teaching could be a meaningful way to add income. While for those still working, these findings do not bode as well. The original thought was that Baby Boomers no longer have children to support, and may be more financially stable, providing comfort despite low teacher salaries. But these findings when combined with low pay that new teachers typically receive, suggest that teaching may not be a viable option for some.

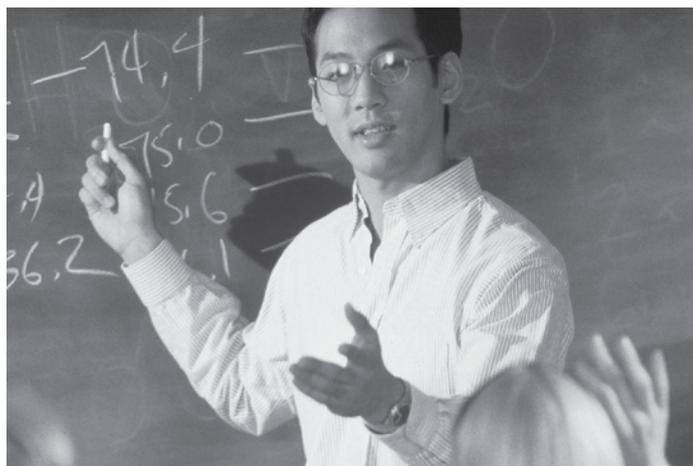
Economic Concerns with the Cost of Transitioning to Teaching

The downturn in the economy and associated resources of professionals planning a career change means financial assistance for the transition to teaching becomes even more imperative. To help ease the cost of transitioning to teaching, EnCorps provides up to \$15,000 to cover tuition for a teacher credential. EnCorps secures the funding for this financial aid through corporate partners who support late-career changers and retirees to become teachers. SEARCH does not offer financial aid, though 75% of survey respondents said the cost of earning a teaching credential was a perceived obstacle to becoming a teacher. An EnCorps candidate still in the application process noted that the expenses are a factor in considering teacher. “I am unemployed and have no resource to cover expenses.”

Budgets for schools

With cuts across the California state budget and in particular with education, schools are cutting back. John Eichinger, an education professor who has taught at Cal State L.A. for 16 years and had taught in public schools for 15 years said of new teacher candidates looking for jobs, “I can’t remember a worse time. It’s desperate. Students are very excited and idealistic, and they can’t wait to get out there, and there’s no place to go.”²⁰

In March 2008 State Superintendent of Public Instruction Jack O’Connell announced that an estimated 20,000 teachers, counselors, librarians, nurses and support staff have been given potential layoff notices. The layoff notices were in response to the state budget crisis and the Governor’s proposed plan to cut \$4.8 billion from education funding²¹. This fall, the Governor has proposed additional cuts of \$2 billion.



The 2008-09 California state fiscal crisis has the potential to be catastrophic for local school budgets according to Scott Plotkin, executive director of the California School Boards Association.²² Los Angeles Unified School District, the largest in the state and second largest in the country with over 700,000 students and 33,000 teachers, exemplifies the budget crisis in education in California. Los Angeles Unified School District Supt. David L. Brewer recently sent a letter to all employees that stated, “California’s financial picture is getting worse every day” and “without substantial, systematic, responsible district wide cuts and help from Sacramento, LAUSD will not be able to make payroll by the end of next school year.”²³ The smaller budgets for California schools are a major constraint on transition to teaching programs.

In California, possible budget cuts may lead to another intense anti-budget cut campaign that will include widespread coverage of teacher layoffs. While there still may be openings for new teachers in subjects that have a chronic shortage of teachers such as math and science, potential career changers that read news of teacher layoffs may perceive a dwindling market for their services in education. This perception has proven to be a real concern in recruiting new STEM teachers during times of budget shortfalls.

Though the full effects of the budget cuts remain to be seen, the perceived availability of teaching jobs will impact retiree interest and teacher hiring will be affected if school districts don’t have the funds to hire teachers.

Factor # 5: Focusing on “highly qualified” full-time teacher candidates

Finding STEM professionals considered “highly qualified” teachers has proven to be more difficult than originally anticipated. A key aspect of the EnCorps and SEARCH models that limit their appeal is the focus on full-time teaching.

A successful late career transition to teaching program, says one retiree expert, needs to “consider alternatives to the full-time teacher position, including after-school programs, weekend assistance and cohort models that would enable individuals to share their experiences and garner strength in numbers once they are on the ground.”

Many candidates share a passion for teaching—over 88% of those still in the application process for EnCorps were excited about becoming a teacher and 95% of those who had completed the application were excited about becoming a teacher. That said, many determine on their own that full-time teaching is not the best option for them. However, there is still interest in an alternative to full-time teaching. For example—

- 66% of SEARCH candidates were interested in tutoring
- 44% were interested in mentoring individual students, as well as mentoring/sponsoring a classroom at a local school
- 63% of SEARCH candidates were interested in participating in a joint industry/organization for planning methods to improve student performance

Rather than only focusing on recruiting and training quality teachers, it is just as important to improve quality teaching through co-teaching, part-time support, tutoring and other channels. Many candidates have a deep understanding of the importance of math and science and have a broad knowledge base that they want to share. This knowledge can be very valuable to current math and science teachers if our schools are able to incorporate it. The CCST and CSTL report found that professional development opportunities for middle and high school science and mathematics teachers fall short of meeting the increasing need for deeper subject matter and content knowledge.²⁴ Collaborative opportunities for STEM professionals and math and science teachers could increase the quality of math and science teachers and keep current math and science teachers excited about the subject matter.

Since there are a variety of challenges facing math and science education today, beyond just the teaching shortage, this group of passionate STEM professionals should not be excluded simply because they cannot teach full time.

Factor # 6: Challenges with Teacher Placement

An EnCorps candidate still looking for placement noted, “If I was doing this myself, I would have given up long ago. I now have no sympathy for school administrators who say they need more quality

teachers. The system is just not set up to support and attract people.”

The majority of SEARCH applicants felt that guaranteed placement in a specific school would be necessary for them to continue to consider teaching as another option. With the amount of effort that goes into a career change into teaching, professionals want to know that they will have a job at the end of the process.

After candidates fulfill the prerequisites to becoming certified, there is no guarantee of placement within a school. The New Teacher Project found that even as recruitment efforts in large urban school districts have increased and the number of highly qualified teacher candidates has increased, they do not get hired due to late hiring practices.²⁵ “The prevalent explanations for not hiring teachers until August are poor design and execution by the district human resources offices: a cumbersome application process; too many layers of bureaucracy; inadequate customer service; poor data systems; and an overall lack of urgency.”²⁶

EnCorps has found this to be true as it continues to seek placement for two candidates who are qualified to earn an intern credential. When compared to all the other processes to become a teacher, nearly six out of ten candidates who were accepted into EnCorps found securing a position to be very difficult. Of those candidates still in the process, 25% perceived the process to difficult and nearly 60% said that guaranteed school placement would increase the likelihood of them continuing in the application process.



LESSONS LEARNED

Much can be done to increase the visibility of programs like SEARCH and EnCorps with not only late career changers, but also with corporations and school districts. This powerful idea of connecting math and science professionals to the classroom, and specifically teaching, needs to be tested on a broader scale. The groundwork to start building has been laid for EnCorps as it incorporates SEARCH. To highlight the incorporation of SEARCH into EnCorps, we refer to the merged organization as EnCorps/SEARCH. Following are six lessons to move forward with increased recruiting and support to create success in the midst of policy and economic constraints.

Lesson # 1—*Recruitment methods: Communicate early and often the benefits and rewards of teaching*

a. Provide opportunities for potential teachers to experience classrooms in action

School communities can be daunting for those who have not been in a school in a long time. Each school has its own culture and carries a level of mystique to those outside its walls. The culture of a school can differ vastly from the corporate world. To help potential candidates understand what being a teacher entails, have them hear from teachers and principals directly and if possible visit a school. Informational town halls and classroom observations where candidates can meet students, families and teachers can give the candidate a fuller sense of how powerful teaching is, what the rewards are and what the working conditions are like.

b. Target employees more than two years prior to planned transition

Develop a long-term recruiting plan that includes building a pipeline of future candidates. If the idea of teaching is planted long before a planned career change, professionals have time to think through the serious commitment and begin to have exposure to a school environment. Additionally, this time period can also be used to think through critical financial questions. The transition to teaching can be huge, and with the process spread out over time, potential candidates can ease out of industry and into teaching. While a recent college graduate might not think twice about relocating to teach in a low-income school, the target population of EnCorps /SEARCH has more at stake when changing professions and communities.

Lesson # 2—*Recruitment methods: Determine how to develop professionals who will meet the “qualified teacher” standards*

Principals are looking for teachers who will be able to effectively manage a classroom. For late-career changing teacher transition programs to succeed, ultimately they need to provide support that builds teachers that principals will want.

The key for transition-to-teaching programs is to ensure that individuals are identified and supported who:

- have a passion for STEM subjects
- are able to adapt from the corporate culture to the understanding that success is measured in the classroom not by promotion, compensation or recognition, but by how well the students achieve
- desire to achieve the same high level of professionalism in teaching that they reached in industry; with an understanding that this will require time, effort, and new training
- have the capacity and energy to excel in an “On-the-Job” training program where they do the work of teachers (lesson planning, teaching, grading papers, etc.) while simultaneously completing teacher preparation program academic courses on a part-time basis
- have the skill set to communicate effectively with grades K-12 students

The above characteristics can be identified through interviews, recommendations, town-hall meetings and classroom observations. It is imperative to explore the ways to nurture and support these characteristics in late career changers and retirees passionate about teaching. This review process is an integral part of the recruiting of EnCorps/SEARCH types of programs. The proper review and support process further reinforces the requirement to start as early as possible in the recruitment of late career changers.

In the long run, the review and support of candidates who are a good fit for teaching will build a strong reputation for the program and promote success. As an example, Troops to Teachers’ success is in large part due to the positive reputation its participants have earned with school administrators, other faculty members, parents and students. Initially, Troops

to Teachers had to overcome the stereotype of a veteran trying to run his/her classroom like a Drill Instructor training new recruits. After 14 years of success, this stereotype is no longer an issue with school districts because a critical mass of Troops to Teachers participants has the reputation as being excellent teachers who are fully vested in the success of their students. It is integral to the future recruiting of EnCorps/SEARCH that this same reputation be established.

Lesson # 3—*Recruitment expansion: Provide more defined pathways for late career changers to assist in raising student achievement in STEM subjects*

SEARCH and EnCorps experiences show that many late career changers understand the necessity of raising student achievement in STEM subjects, yet do not desire to teach full-time. EnCorps/SEARCH should expand the program to offer alternative pathways for late-career changers to formally affiliate with schools and school districts as mentors, teacher resource support, tutors, part-time or temporary teachers. There is an opportunity for EnCorps to become the primary conduit in California between school districts and late career changers to use this immense human resources pool to raise student achievement in STEM subjects.

Facilitating the connection between talented career changers seeking part-time instructional positions and school districts seeking resources to raise STEM student achievement can nurture a pipeline of participants who will move on to full-time positions in the future.

Lesson # 4—*Support: Strengthen and expand partnerships with corporations to enhance financial assistance for participants*

The experience of both SEARCH and EnCorps programs highlights that financial support is key for professionals who want to transition to teaching. A major challenge for SEARCH was that no financial assistance was available. With the demand for teachers so high, the cost of credentialing should not be a deterrent to becoming a teacher. Corporations can provide financial support to encourage employees to consider teaching as an option. EnCorps has been able to partner with several corporations and foundations in this pilot year and should consider more aggressive recruitment of funders to both sustain the financial aid portion of the program, and assist with the recruiting efforts.

Lesson # 5—*Support: Strengthen and expand partnerships with schools*

School partnerships are important for several reasons. From a recruiting standpoint, a key ingredient to recruiting professionals in the field is to give them first-hand experiences in schools. Many late career changers have not been to a middle school or high school in decades and are unfamiliar with schools and teaching today. Classroom observations are an important part of overcoming perceptions about teaching. Additionally, many candidates are not yet qualified to be teachers, but are very committed to using their expertise to help out in the classroom. Volunteering or mentoring will be a great place for the candidates to start and to “test out the waters.” Strong school partnerships are essential for a successful transition to teaching program.

Building a network of partner school districts also permits the development of “hire in advance” programs. Major school districts in the state can provide formal partnerships to provide contingent contract offers to future teachers up to three years in advance to those preparing themselves to teach math or science. Troops to Teachers currently has such formal arrangements with Los Angeles, San Diego and Fresno School Districts. Under these agreements, a candidate must have passed the CBEST and CSET examinations and be eligible to enter a state approved intern program upon beginning the teaching contract. This opportunity is a recruiting tool that helps prospective math and science teachers focus on a specific timeline and list of actions as they transition. It removes the anxiety from the transition and provides a clear pathway to a known position.

Lesson # 6—**Continue research of STEM professionals transitioning to teaching**

EnCorps and SEARCH have provided a small glimpse into this specific market of career changers. More and deeper research is needed to understand the mindset of STEM professionals and retirees who are considering teaching as a retirement option, but have not begun applying to programs like EnCorps and SEARCH. As EnCorps/SEARCH reaches out to this powerful and experienced audience of Baby Boomers and as more corporations engage in the program, research into this emerging group of educational change agents is vital. Questions to study include among others, what kind of further support is most effective for late career

teachers? What are the characteristics of a successful late career transition teacher? As EnCorps/SEARCH matures, more research needs to be done on the effectiveness of these teachers once they are in front of a classroom.

CONCLUSION

Within the borders of California lies a huge resource to help address the crisis that K-12 math and science education is facing in this state. Every student deserves to have a qualified math teacher and a qualified science teacher. Every student deserves a math and science education that is relevant and capable of preparing them to pursue a college degree in math, science or engineering. California's future workforce depends on our school system to prepare and excite students about math and science. Initial research shows that "Baby Boomers" from the STEM fields want to help and are excited about becoming involved in the classroom if California schools are willing to support them.

Reaching out to late career changers is going to take different recruiting strategies that have previously been used to recruit teachers. Making the move to become a teacher is a big leap from working in the corporate sector and requires a whole new set of skills, as well as adaptation to a new culture where success is measured differently. The transition is a large undertaking that with significant amounts of support has amazing promise.

The challenges—both real and perceived—that STEM professionals face as they transition to teaching can be overcome with the right recruiting strategies, partnerships and support. Late career changers need to be encouraged that this transition to teaching will be rewarding and that the steps along the way will help them be confident teachers. Whether STEM professionals become full-time teachers, mentors, professional development resources, or class sponsors, California cannot afford to lose out on the expertise that STEM professionals can bring to inspire new generations of scientists, mathematicians and engineers.

The Baby Boomer generation that is now retiring and looking to continue to contribute in a meaningful way will not alone fill the growing need for math and science teachers in California. But they can play a part in changing the direction of K-12 math and science education. Our students deserve to learn from adults who are knowledgeable and passionate about their subject matter and understand the vital role that these subjects have in education, the economy and everyday life. California's late career changers and retirees deserve the chance to be agents of educational change. And our state and nation need strong math and science teachers.

ENDNOTES

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