

# First-Generation College Students: Fostering Success in College and After College

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"Man doesn't really exist unless he's fighting against his own limits."  
Ignazio Silone, *Bread and Wine*

*Abstract. The United States is in the midst of a profound educational challenge with a new population of first-generation college students and new immigrants (many from minority and/or low-income families) entering into a social and economic environment which relies more on knowledge than on traditional forms of labor. This essay discusses conditions for success of this new group of students in college, and in particular it explores the qualities which are central in preparing them for a fulfilling life after graduation.*

## Part I: Fostering Intellectual Stamina

We want to look at the preparation of college students for life after graduation, particularly young people from groups under-represented in graduation rates in the United States. These are minority students, children of new immigrants, and low-income students who are the first in their family to attend college. What is the role of college faculty and college courses in preparing them for their lives and their careers after graduation?

Of course such a question assumes that such students are going to graduate, when in fact our sad experience as college instructors and/or administrators tells us that this is often not the case. Furthermore, the premise takes for granted that the students characterized above, often from inner-city or rural environments, will enter college in the first place. Perhaps the greatest challenge in the United States today is the challenge of public education. Will the system change enough to foster access to college for every young person with the potential to succeed? I will preface my discussion of qualities and skills for post-graduation success with some remarks about gaining access and staying in college. In fact, there is a congruity between the three: entrance into college; persistence in college; success upon graduation. Many of the characteristics needed for

one of these will be necessary for all three.

The constellation of these qualities I will call *intellectual stamina*.

### What is Intellectual Stamina?

Let us approach the content of *intellectual stamina* by analogy to sports. Venus

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and Serena Williams were raised by their father to be champions; a certain kind of athletic and competitive stamina was encouraged in them almost from birth. Mr. Williams certainly imparted the skills and strategies to excel in tennis, but he delivered these within an atmosphere that prized perseverance in achieving this excellence. When we see Tiger Woods in a TV clip as a small child, saying “My dad taught me,” we are sure that he is referring to much more than the essentials of golf. A similar phenomenon is noticeable in the arts. William Kennedy, the writer, could not have persisted through the rejection of his manuscript of *Ironweed* by thirteen publishers before it was finally accepted,

without an inner confidence that what he had written was valuable, and a level of personal energy that did not permit him to give up. The analogous reality in academic life, the collection of personal, emotional, and mental qualities that cause us to persist in the pursuit of the excellence of the mind, I call intellectual stamina.

Here is a personal example of this stamina. Lisa and Stephen, our niece and her husband, both graduates of Auburn, were visiting us a few years ago. They had gone out and we had to leave before they came back, and so we left them a note on the reverse side of a sheet of paper which happened to have a calculus problem that I had given to one of my classes. Our visitors discovered the question and worked together to solve it. Many years had passed since they had studied “related rates” problems in college, but they had the mental aggressiveness to take the question as a challenge, and the confidence that they could solve it, and they then brought into play the skills to do this. Notice also that they did this in a cooperative way, something we’ll take up below. One can imagine that their former college instructors would be extremely proud not only of their use of calculus long after graduation, but furthermore, would appreciate their mental confidence and their ability to communicate with each other to design a solution.

It is no great surprise that Lisa and Stephen’s post-graduation life, in medicine and engineering respectively, has been an unusually fulfilling one.

## The Challenge: The Rising Percentage of the College Population Lacking the Usual Social Capital

Two young people with the same academic potential and the same educational access (curriculum and teaching), but with differing levels of intellectual stamina, will often “achieve” very differently. One will enter college, usually a college appropriate to his/her promise, and the other will not.

Should both, however, enter college, one will persist in the academic program, the other often will not; should both graduate, though, one will carve out a creative career, and, unfortunately, all too often the other will not.

I mentioned access. Equality of educational access is often denied the population being discussed in this article. Students in the inner-city frequently lack the curriculum and standard of teaching that are taken for granted in most suburbs. This is a major issue and it is fundamental that this inequality be fixed. But shortcomings in pre-college curriculum and teaching, while pivotal, are only indirectly under discussion here. (For an explicit treatment of the academic responsibility of the university

to inner-city secondary school curriculum and teaching, see the writer’s, “Connecting the University to Secondary School Mathematics,” *PRIMUS*, (XII, 2), June, 2002, pp. 135-156). Equal access—not even close to being achieved at present—is essential but not sufficient. Stamina-strengthening must be interwoven with access in order to achieve success.

That is why we hear so much these days about “social capital,” the web of resources and supports available to young people throughout their personal academic history. This social capital is the ground of success for many suburban students whose parents have been to college. Elements include: a family narrative of academic achievement; family encouragement and a home environment of high expectations; a framework at home which ensures the completion of homework on a regular basis; a family library and access to high-level reading materials; attendance at a school with rich resources, including strong college preparatory counseling; association with other students who also have strong academic ambitions. Often the parents even provide privately financed access to SAT prep programs and visits to prospective colleges.

In this way, for many students, social capital becomes the principal source of intellectual stamina. And the differences in social capital have risen to crisis proportions in the United States today. David Brooks, in an *International Herald Tribune* editorial page article, January 26, 2005, labels the current system, paradoxically, “Hereditary Meritocracy,” where family status determines educational success. Brooks puts it this way:

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At the top end of society we have a mass upper middle class. This is made up of highly educated people who move into highly educated neighborhoods and raise their kids in good schools with the children of other highly educated parents. These kids develop wonderful skills, get into good colleges . . . then go out and have their own children who develop the same sorts of wonderful skills and who repeat the cycle all over again.

The result: a hereditary meritocratic class.

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The question for us is: How do we foster intellectual stamina in college students who come to us lacking this social capital, so that these students will persist in college, and be well prepared for their life after college? We must weave into curriculum and teaching the other elements which make for intellectual stamina. These are principally in two categories: 1) communicating high expectations; and 2) creating an environment where recognition and resources are available for intellectual work and achievement.

These qualities are often not visible to the casual observer, but in a school which possesses them, students will become conscious of themselves as people who can “think about things,” who can talk and write about what they think, who can solve problems. We would say that the students think of themselves as having intellectual ability.

### **Transforming a Course to be a Vehicle for Stamina**

I'll talk about the first-year calculus course (because I've been involved in calculus renewal for a while) as an example. I emphasize here that it is not necessary for the reader to know calculus; the basic point being made will be applicable to almost all disciplines. The discussion will suggest ways in which expectations and recognition-and-resource elements can be introduced into our work as instructors.

This would be especially true of courses which are undergoing reform and renewal themselves, as was the case with calculus over the past twenty years. By the 1980s it was widely seen the “plug and chug” system had driven calculus for too long, and that while more fields required mathematics, fewer and fewer students were successful at college calculus. Lecturing to students while building a collection of formulas without much meaning or utility just didn't work. And this was true for all students, not just the first-generation college students who are being considered here. The mathematics had been coming from the instructor, to be applied like wallpaper. The goal of calculus reform was to up-end this process. Rather than have the mathematics flow out of the teacher as from a font, it should be elicited from, created by, the students. This way of looking at things resonates, I

am sure, with most educational reform efforts, not just those in mathematics.

The point here is that being creative in the learning process is especially important for the students who come to college with lesser amounts of social capital; that is, those whose accumulation of intellectual stamina may be minimal. The course can then be a vehicle for growing expectations and for recognition and access to resources.

To see how this can be so, here is an example of dialogue from a calculus class (the reader not conversant with calculus need not be concerned but simply notice that we have here a participatory conversation rather than a one-sided narrative):

*Instructor:* “What does  $X^2 + Y^2 = 16$  represent?”

*Student:* “The equation of a circle.”

*Instructor:* “Good.”

*Student:* “Radius is 4.”

*Instructor (drawing the circle):* “What is the slope of the curve when  $X=3$ ?”

*Student (after a long pause):* “There isn’t any . . . or rather, there are two slopes, one on the upper half, and one on the lower half of the circle.”

*Instructor (scratching head, Columbo-style):* “Interesting. Let’s look at another approach. How do we take the derivative of  $U^2$  with respect to  $X$ ?”

*Student (after pause):* “ $2U dU/dX$ .”

*(Instructor writes the entire statement:  $d/dX (U^2) = 2 U dU/dX$ .)*

*(The students know that this does not confer any authority on the equation, just that it is a student’s opinion at the moment, a position to be supported, opposed, modified, and ultimately accepted or rejected.)*

*Instructor:* “How many agree?” *(Students indicate agreement).*

*Instructor:* “There seems to be unanimity here. How did Jose do that?”

*Student:* “The chain rule.”

*(Instructor writes “CHAIN RULE” on the chalkboard without comment).*

*Instructor:* “What’s the equation of the circle again?”

*Students:* “ $X^2 + Y^2 = 16$ .”

*Instructor:* “Now, can we take the derivative of each side of the equation with respect to  $X$ ?”

*(Students signal in the affirmative.)*

*The course can then be a vehicle for growing expectations and for recognition and access to resources.*

The students are then led to take the derivative of each side and equate the two, obtaining  $2X + 2 Y dY/dX = 0$ , which they then solve for  $dY/dX$ . The students find that the answer depends on both  $X$  and  $Y$  and that there are indeed two slopes, one for a given  $X$  and the corresponding upper  $Y$  on the circle, and another for the given  $X$  and

the lower Y. The instructor then writes “IMPLICIT DIFFERENTIATION” and proceeds to another example.

The above script can be used to talk about curriculum and teaching, but here we want to emphasize it as a vehicle for the less tangible qualities of high expectations on the one hand and resource and recognition delivery on the other. These qualities contribute to intellectual stamina. Using a script or dialogue with open questions gets students used to participating and creating.

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Leaving the authority over the conclusions to a student vote helps to confer confidence. The give and take of the conversation gives the instructor chances for positive reinforcement. The students, at their own level, are doing mathematics the way that mathematicians do it: testing out their guesses, trying different approaches on a concrete example, constructing lines of reasoning to support their conclusions. In short, they are experiencing discovery.

The instructor might then depart from the Socratic dialogue exemplified above, and give the students a few increasingly challenging problems to be done in small groups. The expectation that these can be solved will again assist in confidence-building. Group work with one’s peers has as a by-product the

strengthening of student ability for serious discussion and negotiation.

In addition to this, students should be asked to write about the mathematics they are learning. They should be able to reproduce the reasoning in a problem by a series of equations or verbally. Developing this direction still further, students can be assigned short projects to be written up completely. In our first-year calculus course, the project takes the form of a differential equation modeling example. Students are asked to describe a problem; for example the need to repair bridges in the United States. The student might consider that these bridges are falling into disrepair at a rate proportional to the total number of bridges in the country at any given moment. (The reader familiar with the mathematics will see that this situation can be represented by a differential equation.) Students can then describe the situation verbally and then mathematically, solving the equation and using numerical and graphical methods. The paper would finish with an exposition of various scenarios for dealing with the problem of bridge repair. Finally, student projects might be orally presented to the class.

Notice the practices summarized here: engaging in a dialogue with the instructor; working in small groups to solve problems; writing short projects; presenting these to the class. They are all activities that communicate high expectations that say to the student: “You are able to do this, and do it well.” They are all activities that open educational resources to the student and provide personal recognition and feedback to the student. In short, they are activities that foster intellectual stamina.

It is my experience that this manner of conducting a course has the power to excite and enthuse the student in his/her achievement and to help the student persist in college. More to the point in this essay, such a transformed course has the potential to prepare the student for a fulfilling work-life after graduation. The qualities stressed are related to skills that are important in a career: to be a self-starting thinker; to be able to frame and solve problems; to be able to collaborate with others, often in teams or groups; to have the capacity to write and speak coherently and persuasively.

But we must emphasize that this kind of education does require resources. To be blunt, the college must be willing to foot the bill entailed in students having a personal interaction with the instructor (and perhaps student course assistants) like the one which I've begun to describe above. Carrying out the above activities embodying high expectations and extensive recognition of student achievement cannot be done on the cheap. And it must be said bluntly that such a program runs counter to the direction that many colleges are presently taking, in particular to the trend in many places to increase class size. This "efficiency" movement is a barrier to attempts to increase access and success for the new generation of college students.

Hand-in-hand with the false "streamlining" of education is the tendency to place too large a reliance on uses of technology which have no proven educational advantage. Don't get me wrong. Technology can provide a powerful supporting role for the personalist brand of teaching advocated here. Importantly, the exploratory nature of mathematics is made clear and more powerful through a judicious use of the graphing calculator or the computer. Also, the connection with the instructor and other students can be enhanced by e-mail. On the other hand, careless reliance on technology can be just as bad as the former lecture system of teaching, with information coming from a source to a hard or soft copy devoid of any connection with the student's thinking.

There is one last element that needs to be mentioned in connection with developing intellectual stamina in our students. Wherever possible, students should take part in programs which help other young people coming after them. Their own growth should lead them to assist in the growth of others. An ideal activity is the tutoring of students in a nearby high school. Such mentoring activities will have the byproduct of crystallizing the college students' knowledge and interpersonal development. The skills for success after graduation are brought together through this kind of "intellectual apprenticeship."

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## Part II: The Intellectual Life of the College Graduate

Of course, for most students, telling them that they are going to be intellectuals in any sense is going to be met with nervous disclaimers or even derisive chuckles. But we should not be afraid to find ways to communicate to students that the goal of their education is a rich intellectual life. Because this life is one which is meant to

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grow out of each student's personal roots, not imposed upon him by his professors, it has a genuineness with which students can become comfortable. The false kind of intellectual life, the one which evokes the jokes involving nerd-related stereotypes, arises when the instructor tries to acculturate the student, that is, to remove the student from his/her roots in order to produce the kind of person that the instructor has become. This might be genuine for the instructor, but consciously or unconsciously the process attempts to mimic the kind of education that the instructor received in his/her graduate instruction. This common process—labeled “the laying-on of culture” by John McDermott in an incisive 1969 article in *The Nation*—is usually rejected by the student. That is a good thing, because this kind of mental development is not

authentic. Authentic intellectual life does not alienate the student from his ethnic and social roots, but grows from these roots and represents a deepening and expansion.

This point deserves more discussion, since we are now at a point in time in which higher education is attempting to reach out to new populations. Often those groups were previously denied college access. One of the ways of reading Carlo Levi's classic book *Christ Stopped at Eboli* is as a meditation on rootedness. Exiled from Turin to the primitive south of Italy in 1935 by the Fascist government, Levi chronicled in uncompromising terms the life and challenges of the peasants among whom he lived. One event that he describes is the performance of a play of Gabriele D'Annunzio (who had come from this region himself) by a traveling group of local players. The players gave their lines in an unadorned manner whose power Levi suggests could not begin to be approached in the velvety theaters of Rome. D'Annunzio's meaning appeared with a straightforward clarity. Just so, the student represents his family and his community in a way that no one else, from outside, can. His education should be a way to be responsible to that community. That is why mentoring younger members of one's community, already mentioned in connection with honing one's intellectual skills, can be so important in building social responsibility as well.

An example is a young woman whom I will call Denise Aime, who arrived in the United States from Haiti and entered her junior year in high school. Only a year later she participated in a summer program, on our college campus, for high school students to prepare them for calculus in their high schools. Denise did well in her senior year

studies, including calculus, smoothly bringing her disciplined Haitian schooling habits into an American urban high school environment. Subsequently she became a mentor in the same program which prepared her for calculus, advising and assisting other inner-city students of Haitian background. She won a full scholarship Tufts University to major in engineering. In addition, Denise was able once again to utilize her first language, French, during her junior year abroad in a university in France. Denise will graduate from college this year, well prepared to make a productive and fulfilling contribution in the world of engineering, an educated American who is connected to her community and her background.

In the framework of this authentic rootedness, the three qualities within reach as goals for the graduate are: 1) entrance into, and growth in, a profession; 2) creativity; and 3) socially responsible leadership.

Our graduates can look forward to a profession, to a career, rather than a job. That is probably the principal thing their parents had in mind when they sacrificed to help send them to college in the first place. The graduate should have a high confidence of moving to a level of living and well-being for himself and his family which is very high.

Secondly, our graduates can expect to go on nourishing a creativity of mind. This creativity will in particular allow them to approach a variety of problems with the expectation that they have the ability to solve these problems. Such creativity, a central goal of an education which is centered on the nurturing of intellectual stamina, is a humanizing force which is meant to unfold over a lifetime.

Finally, our students' undergraduate experience should have helped them grow their intellectual life in a pattern of social responsibility. This requires some discussion. Social responsibility is directly related to the nurturing of an intellectual life that is personally authentic—one that should grow, as we've said, out of each person's biographical roots. And we've all known graduates who have taken a position of leadership in the ethnic communities from which they come.

Of course responsibility does not stop with one's own family or ethnic group. It is meant to extend in ever widening circles through space and time, to those around the world. Indeed this responsibility extends in concentric circles to the entire creation, and through time into the future. Education and a career bestow freedom. This is important. But freedom from what and for what? Freedom for mindless consumption, accumulation, and waste? This point needs to be stressed because colleges, anxious to increase their marketability, have often turned themselves into centers of consumption for their students. Colleges often communicate to their students not that they are entering a community of scholars, but that they now have access to four years of high-quality lifestyle. One might think the priority is preparation for a consumer society

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rather than a knowledge-based society. So we must constantly ask ourselves: into what kind of society are our graduates gaining their freedom?

An argument can be made that we live in a historic window of opportunity. The crises of history—social and technological—have crystallized in our time. The people who are going to succeed or fail in solving these crises in the short time we have available are entering college now. To illustrate this, let's use the energy crisis, one of the

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principal challenges today. It would be alarming enough that the population of the United States, five percent of the world's population, uses almost thirty percent of the material resources that produce energy. This energy, mainly from nonrenewable sources including oil, coal and nuclear fuels, keeps growing in cost, pollution, and danger. And the energy is produced in a wasteful and inefficient manner. Severe climate and health problems arise as other countries seek to imitate the United States' energy path.

Does anyone really doubt that the United States can harness the technological education of its young people to produce an immensely better system, based on highly increased efficiency and the use of renewables in the form of solar, wind, and hydrogen, with powerful positive consequences internationally?

Mobilization for such a future would cut energy's Gordian Knot, woven of pollution and the danger and cost that comes from growing scarcity. Given the nature of entrenched interests, however, the only way this can be done is through an educated activism that is the fruit of social responsibility.

We cannot put off integrating into our educational system the discussion of the kind of society our knowledge and know-how are going to be shaping. And these kinds of questions will then become the daily bread and butter of our graduates. The young men and women who will be aware of these choices, and who will have the capability to solve these challenges, are sitting in our classrooms today.

## **Colleges Must Change**

**A fulfilling career for first-generation college students authentically connected to their roots. A life of mental creativity. A deepening social responsibility.**

To achieve these outcomes, colleges and universities must change. They must renew themselves. The calculus course discussed in Part I of this essay is a renewed course. It requires a dialogue with the new generation of college students. It represents an investment in using and developing the habits of mind and the skills which will make these students leaders in their community.

Today's college must always be looking to be welcoming and supportive to the new types of college students. And it must be flexible. As an example, consider the organization "Posse," which selects and prepares talented inner-city young people for scholarships in colleges across the country. These students, often African-American or Latino, are usually not only the first in their family to attend college, but often the first from their high school to attend the specific college in question. There is an intensive preparation, and Posse arranges for several students to form a community, a group within each college. (Posse took its name from the expression of one young urban student who dropped out of college because of culture shock, saying "I would have made it if I had my posse with me.") The student does not go alone to the new college. The group studies together and the members support one another. And they also reach out to others and try to influence the school. Meanwhile, the organization continues to check on and assist the students as they make their way in an unfamiliar environment. But it is equally true that the college is not used to these students. (This is the unfortunate effect of the "laying-on of culture" inertia discussed above.) The Posse students are trained to change the college culture, and to work at giving future students of their background a better shot at success.

*The way the instructors think about each course must be re-thought as well.*

The way the instructors think about each course must be re-thought as well. The social responsibility described above means that the instructor sees the individual course not as a discrete piece, but as an organic part of a whole education. Continuing our energy example, the instructor who believes that the United States energy policy is nonexistent and our path as a society is on a downward spiral should say so. (Of course his position is open to discussion and is only as good as the evidence that is brought forward, and students are always to be invited to criticize and to agree or not, presenting their own reasons.) So the courses in a student's college years are not individual stones along the way, but form an edifice which houses the intellectual life. Our greatest reward as teachers is to play a role in the building of this life, so that we can expect to see the student graduate into a fulfilling career, a growing and consistent mental creativity, and a leadership informed by social responsibility. We can then be satisfied that we have been instruments in a constantly expanding and deepening process.

Carlo Levi, in his political exile, plumbed the depths of the peasants' lives in southern Italy and found there a stark beauty, but his unflinching report, *Christ Stopped at Eboli*, leaves no doubt about his pessimism. Conditions of life there, unchanged for centuries, offered no evidence that there could be improvement. This is what makes our work with students so different and so rewarding to us as persons in education. As we try to nurture an authentic intellectual life with them, we realize that change is possible;

in fact the potential for change is almost what defines the young person today. We can have the satisfaction that comes from helping build the capacity for a more fully human future, for persons and communities, a process we call education.

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