

# **K-12 Education: The Gateways to Achieving America's Dream**

by

**Albert J. Simone, President  
Rochester Institute of Technology**

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## **AMERICA'S DREAM**

What is America's dream? One hundred people probably will answer that question in 100 different ways. My answer is:

"America's dream is that every child has the opportunity to achieve his or her full potential and to contribute to the community in which he or she lives."

Achieving "America's dream" is not possible without an efficiently functioning K-12 system of education across the nation. In what follows, I shall discuss four of the important gateways provided by K-12 education.

The four gateways are:

- Gateway to an informed citizenry.
- Gateway to higher education.
- Gateway to values by which to live a life.
- Gateway to filling the void left by some families and poverty.

## **GATEWAY TO AN INFORMED CITIZENRY**

Americans need to know about globalization, free markets and free trade, and the politics of democracy. These are changing the world in which our children will function as adults and they must know about them. For example:

- In 2005, 400,000 American IRS returns were prepared in India.
- Plans are underway now between Indian and Israeli firms to transmit CAT scans via the Internet so Americans can get a second opinion from an Indian or Israeli doctor more quickly and cheaply.
- Indian engineers can handle most technical jobs at one tenth the cost of American engineers.
- When you order a burger at the drive-through McDonalds on Interstate 55 near Cape Girardeau, Missouri, the person taking the order is at a call center 900 miles away in Colorado Springs.
- When you call Jet Blue for a reservation, you are talking to a housewife in Utah working part-time.
- Wal-Mart last year imported \$18 billion of goods from 5,000 Chinese suppliers (who represent 80% of Wal-Mart's suppliers).

- For American automobile makers, health benefits cost \$6,000 per worker if the car is manufactured in the United States. If it is manufactured in Canada, because Canada provides socialized medicine, the cost per worker is \$800.

As Thomas L. Friedman says, today the “world is flat.” These examples and others can be found in his book *The World Is Flat* (Farrar, Straus & Giroux, 2005).

RIT has 15,400 students. Of these, 1,400 are international students from 100 foreign countries studying on the RIT campus. In addition, there are approximately 700 students in a branch campus in Dubrovnik, Croatia earning degrees in hospitality management, 100 students in Prishtina, Kosovo in an AAS degree program in applied science and technology with a concentration in entrepreneurship and business development, and approximately 50 students in an MBA program in Prague, the Czech Republic. We also offer programs in South America and Central America to students with majors in engineering and business. We are planning on being on the ground just outside of Shanghai, China in September 2005, offering bachelor’s degree programs in engineering and in computer science.

Globalization has reduced significantly the cost of goods to American consumers. It has also kept U. S. companies competitive in global markets. At the same time, globalization has cost American jobs in certain industries. Clearly, there are short-run and long-run advantages and disadvantages with globalization.

At one time, the Greeks controlled the known world. Then it was the Romans. Then it was the British. Currently it is the Americans. In the near future, it might be China as it continues to grow in power and influence economically, militarily, and politically. Americans need to know as much about the happenings around the world as is possible. Our world leadership position, standard of living, and security demand it.

I am reminded of my experience visiting Tatung Institute of Technology approximately 15 years ago. Tatung Institute of Technology is in Taiwan. It is connected to Tatung Industries, which is a leading electronics company. What struck me when I first visited Tatung Institute of Technology, and stays with me today, is the fact that every engineering student had to be able to read, write, and speak three languages (in addition to Chinese). These were English, Russian, and Japanese. They also had the option of selecting a fourth language. I tested these students as I walked the campus and spoke in English to them. While the degree of proficiency varied, it was clear that they were able to communicate with me (but not I with them).

I thought then, and I still think now, bright young foreign engineers competing with the United States globally being fluent in the languages of the countries with which they are doing business – wow! How do we survive?

What are the implications of this globalization for K-12 education? For me, it is clear. We have to start teaching foreign languages as early as possible in primary schools, carrying them all the way through high school and into college. Our students need to know the

histories and cultures of the countries which make up the globe. We must find ways to connect American students with their counterparts globally.

Of course – and this is not an idle comment – American students need to know the English language and American history and culture as well.

This also gets to a point of view that I hold strongly. I believe American education – K-12 and at the college level – needs to be demanding, tough, challenging, motivational, and creative. It has to enforce a strong work ethic. The outcomes of the educational process need to be measured, particularly with metrics that allow us to compare our educational levels with those of our foreign competitors.

## **GATEWAY TO HIGHER EDUCATION**

The number of high school graduates entering engineering and computer science disciplines has been declining in absolute and relative numbers over the last five years. As a consequence, the U. S. now imports foreign scientists and engineers. Specifically, 20% of professional engineers are immigrants. More than half of the doctorates awarded in engineering are awarded to foreigners. Moreover, U.S. Labor Department statistics tell us that the number of openings annually for information technology and computer science graduates through the year 2012 will be 145,000. However, the number of expected degrees awarded annually is 75,000.

What do we do about this problem? One approach is to state another problem which, by solving it, poses a solution to the problem just described.

Women engineers account for 9% of American engineers. Twenty percent of the engineering degrees awarded each year go to women. If we remove civil engineering and chemical engineering from the mix, approximately 10% of the engineering degrees awarded each year go to women.

We can solve the supply problem in science, engineering, and computers by encouraging more women to enter these fields. Note that today women represent 57% of all college students.

RIT offers an interesting example. The number of women in science, engineering, and computers at RIT mirrors the national figures. However, at RIT, women in these fields graduate at a higher rate and have a higher grade point average. In particular, the top student recommended by each of our eight colleges to represent the college at graduation ceremonies was a woman five out of eight times. In fact, of the eight valedictorians from the eight colleges, the one that was selected to represent the entire university was also a woman (a deaf woman), from our College of Science, majoring in the field of imaging science. Imaging science requires intensive work in physics, mathematics, and chemistry, subjects which some say women are not attracted to or are not good at. It is interesting that they said the same thing about women in medicine, law, and business a decade or two ago. Now the number of

women students enrolled in medical schools, law schools, and top MBA programs exceeds men.

At RIT, we are looking at the concept of a Women's College. This would be a program established specifically to attract women into these technical fields by providing special programming and special communities for women to enhance their success.

Two of our women faculty members in the Golisano College of Computing and Information Sciences are working on a \$350,000 National Science Foundation Grant to try to understand why more women students do not enter the computing fields and, when they do enter them, why they leave at a higher rate than men. Once we know the reasons, we can establish programs to counter them.

What can K-12 do? First, I believe K-12 should encourage more women students to consider the fields of math, science, engineering, and technology. I believe K-12 should have special programs to orient teachers and counselors in this same direction. Perhaps we could include a course "Women in Science" in the curriculum.

Moving away from women and considering both men and women, I think K-12 should recognize that math and science tend to be abstract and "hard" topics, so that there should be a special focus on motivating students to work in these fields.

Finally, I also believe much more emphasis should be placed on attracting teachers who majored in college in these fields, even if it means bringing in second career scientists and engineers from industry, and even new graduates, who do not have degrees in teacher education. Knowledge of and passion for the discipline is the most important factor in successful teaching of this subject matter (in my judgment).

## **GATEWAY TO VALUES BY WHICH TO LIVE A LIFE**

Turning now to a new gateway, I recall an experience at the University of Hawaii when I was there. I was asked to be the keynote speaker at a banquet sponsored annually by one of the two major daily newspapers in Honolulu. The people invited to the banquet were the valedictorians of each of the high schools, together with their parents, principals, and a favorite teacher. I asked, "What could I tell these students that would be of value to them?" After all, these students would not be at the top of their classes unless they were smart, unless they worked hard, and unless they had support from family and school. I tried an experiment.

I asked my assistant to review the two daily newspapers over the last two weeks and make a note of every non-duplicated report of unethical behavior. There were two to three fresh reports in each paper each day (not including the Sports section) about lawyers, doctors, politicians, business people, professors, clergymen – in short, individuals from every walk of life – being sent to jail, or on trial, or being accused of maleficence. When we looked into

the stories behind the reports, we discovered that, by and large, these individuals were smart, they worked hard, and they had the support of family, friends, and their organizations. Somewhere along the road, they came to a fork. They did not have the benefit of the wise philosopher, Yogi Berra, who says that “When you come to a fork in the road, take it.” They did not “take the fork,” they took the wrong branch. What do we do as parents, teachers, and friends to alert these young people to the forks in the road that they inevitably will encounter, advising them so that they will take the proper branch?

Of course, we tell them not to lie, steal, and cheat. We also can tell them to treat other people the way they would like to be treated, that is, with respect, civility, and compassion. We could suggest that they listen carefully to different points of view and that they are sensitive to differences. We can tell them to follow through on their commitments.

At RIT, we have established an Endowed Chair in Ethics in our Department of Philosophy. The Chair deals with issues of institutional integrity. He has teamed with college professors in engineering and business. We also have a Center for Ethics in our College of Business. We offer symposia on ethics each year at the university.

At RIT, we also practice “shared governance”. This means that, before a decision is made that is going to affect a particular group, the group is advised that the decision is going to be made. The group’s input is solicited and carefully listened to. The decision that ultimately is made is shaped by this input with the hope that individuals, if they do not agree with the decision, at least will understand its basis and will support it. No system of shared governance, as I have described it, can function effectively without a culture of ethics throughout the organization. It is something that is hard to achieve, easy to lose, and must constantly be worked upon.

What more can K-12 education do? I think you should make an effort to discuss ethical issues in every class and course where they occur naturally; for example, consider the ethics of stem cell research, abortion, Patriot Act, war in Iraq, nuclear proliferation, utilization of the environment, capital punishment, discrimination and harassment, corporate self-dealing, care for the elderly, and genocide in Africa.) You also could offer a special course on ethics. Importantly, everyone – board members, principals, teachers, and staff – must be role models of ethical behavior.

## **GATEWAY TO FILLING THE VOID LEFT BY SOME FAMILIES AND POVERTY**

I am chairing a Blue Ribbon Task Force appointed by the Superintendent of the Rochester City Schools, Dr. Manuel Rivera, to look at the fiscal condition of the District as it relates to the District’s strategic plan and educational outcomes. To prepare the context for this analysis, we took a look at the environment in terms of various dimensions. Let me describe some of these dimensions.

With regard to poverty, the city of Rochester is the 73<sup>rd</sup> city in size nationally but is 12<sup>th</sup> in child poverty, having a higher rate than New York City, Washington, D.C., Chicago, and

Los Angeles. The City School District has 86% of its students eligible for free or reduced lunch. Fifty percent of the schools have 90% or higher of the students coming from a background of poverty. In 2003, 57% of the first through fourth grade classrooms were 100% minority and 100% at the poverty level.

With regard to illiteracy, 43% of the parents of incoming kindergarten students did not initially graduate from high school. Twenty-nine percent of the adult population functions at the lowest proficiency level based on national adult literacy standards. Many kindergarten students cannot recite the alphabet, count to 10, or read simple words.

With regard to health, 38% of the students have problems with vision, hearing, motor skills, language, or cognition that impedes their ability to learn. Eleven percent of the students have health problems requiring ongoing medical supervision. One in eleven students requires prescription medicine during the school day. Lead poisoning affects more than 10% of the children under six years old.

With regard to mobility, every year 20% of the children move at least once, often changing schools as they move.

With respect to safety and violence, the most common short run cause for suspension is “defiance of authority”; 11,000 suspensions for this reason were administered over the past three years. The most frequent long run suspension is for “intentional assault on students or staff”; 1,100 suspensions for this reason were administered over the last three years.

This is an extreme statement of challenging environmental conditions. In general, K-12 education faces a daunting task, particularly in some school districts and among certain families. It must:

- Maintain order and discipline.
- Establish a sense of caring, continuity, and stability.
- Motivate students.
- Engage parents.
- Educate and prepare students to move ahead.

## **CONCLUSION**

The role of K-12 educators in a democratic society is critical. K-12 education provides the institutional foundation for everything that matters in America. I do not believe, as a profession, you get enough recognition and acknowledgment for all the good things you do in a most challenging environment. I want to take this opportunity to thank you for being there for all of us. And I affirm, I believe on behalf of all of your partners in higher education, how much we depend on you, value you, and want to support you wherever and however we can.