

Technology

Does It Make the United States of America A World Superpower?

by: Marilyn Hawkins

Could the United States of America do without the technology of computers and the Internet today in the world in which we live? Has the use of technology made the USA a world superpower? These are the questions that I'm going to attempt to answer in this paper. I take the position that we could not do without computers as we have become dependent on them and, yes, the USA is a world superpower because of this technology.

The quest for this technology in the U.S.A. began in the early 1960s when John F. Kennedy was elected President of the United States. It was shortly before that in October 1957 that the U.S.A. was caught off guard when the Soviets launched Sputnik. The furor began in America to keep up with the Russians and, thus, the race for space began in America. The Cold War between the Russians and Americans was at its peak during this time. "By early 1958, more than a third of Americans thought that the Soviets could wipe out most cities in the United States in a matter of a few hours with their new rockets and missiles" (Bates). The following is an excerpt from Kennedy's speech at Rice University in Houston in 1962 and explains how the U.S.A. was planning to enter the space age:

But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun--almost as hot as it is here today--and do all this, and do it right, and do it first before this decade is out--then we must be bold. (Kennedy, September 12, 1962)

Wernher von Braun, a captured German scientist from World War II, was the man that Kennedy put to the task to develop a rocket that would match the Soviet rocket. The U.S. Defense Department responded to the political uproar resulting from the successful launching of the Soviet rocket by approving funding for the U.S. satellite Explorer project. Von Braun found Kennedy to be a willing, supportive President for the ideas that were needed to keep the space program alive. Because of this, computers were developed that would be lighter and smaller than ever before. This development in computer technology allowed the United States to send a man to the moon by the end of the decade, as Kennedy had predicted. Neil Armstrong was the astronaut who landed on the moon in the Apollo 11 rocket in July of 1969.

It was the transistor that was developed in the 1940s that carved a new era for computers. Before that computers used vacuum tubes. The transistor was an influential invention that changed the course of history for computers. The first generation of computers used vacuum tubes; the second generation of computers used transistors; the third generation of computers used integrated circuits; and the fourth generation of computers used microprocessors. Each invention caused computers to become smaller, faster, and more powerful. Because of these changes in technology, the United States has made significant strides in education. Especially since the computer has become affordable to the average American.

Could the computer today be changing the way people think and learn? The computer generation came after Marshall McLuhan's time. However, McLuhan spoke and explained how "extensions" have developed to help man do things with his body that he couldn't do before. For example, he said that clothes are extensions of man's biological

temperature control mechanisms (McLuhan 1995). In the same way, President Kennedy was speaking of the rocket becoming an extension of man into space.

Today we can say that the computer as a human extension of the mind has transcended the world. Communications between countries and the people of those countries has broken down barriers such as we faced in the "Cold War." There is no more "iron curtain" separating the free world and the communist world. Before the computer, of course, the media extension was the television and the telephone. Because of satellites people can receive communications from all over the world. Information and knowledge is no longer just the time and space in which we live, but has transformed us into a global society.

Over the last 50 years we have seen such a change in technology in our country. Education has had a hard time keeping up with the changes. I believe that education must keep up. The computer has caused a revolution in learning in our classrooms. This paradigm shift in learning began in the 1980s and 1990s and has turned into a revolution in the education of the 21st century. The known facts or "normal science" that Thomas Kuhn referred to in his writings are being disputed. The research that has defended the "truth" about normal science doesn't fit our student's style of learning today. Educators are looking at these truths differently and causing change to occur. The computer as a tool has changed the way we think about the textbook as a tool in the classroom. Many have resisted. Many have changed. There is no going back to the way things used to be.

This is where the quest for space and technology has led this country. Is it good, or is it bad? It has definitely caused the end of the "Cold War." America has been ahead of every country in space exploration. The computer as we know it was developed in the U.S.A. and has been sold all over the world. This technology was first used by the military

especially during the World War II years. After the war and after Sputnik, Americans decided to make the necessary investments that brought us to where we are today.

Where are we today? According to Jane Healy, ninety percent of voters in the United States are convinced that schools with computers can do a better job of education. She said sixty-one percent of Americans would support a federal tax increase to speed the introduction of technology into the schools. In 1995, the results of a survey that asked parents, teachers, and leaders which skills would be most important and computer skills were listed in the top three (Healy 1999). This is the point that we have reached in our country with technology.

Even the Louisiana State Department of Education has begun to promote computer skill certifications. In this age of information and the 21st Century we have some facts from the Louisiana State Department of Education to examine. In a recent regional informational meeting the new diploma endorsements were discussed among teachers in the Greater New Orleans area. Some important statistics were used in this meeting to explain why diploma endorsements are necessary. Some of the statistics discussed were that today out of 100 Kindergarten Students, 45 of them drop out by 12th grade. Twenty-nine of them go directly to work, twenty-six of them go to post-secondary schools and nine of them graduate with a college degree within 6 years. Also, in 1950 the number of high school graduates who entered the workforce, only 20% of them needed to be skilled. This is compared today to a shift that now 65% of graduates who enter the job market need to be skilled workers. (Bureau of Labor Statistics)

The number of skilled workers needed today in the job market is causing educators to reevaluate their programs. Neil Postman says that these changes have occurred quickly

and have created a group of elitists who have the knowledge of a new literacy that has developed since the use of the computer (Postman 1993). It's like in education one speaks of the "haves and have nots." This phrase is referring to the skills of people in the workforce of today who have the skills of operating a computer and those who don't. Postman believed that there exists a conspiracy against those who don't have access to the special knowledge gained from the literacy of using a computer by those who do (Postman 1993). Perhaps he was right. The gap is widening today between the people with technical skills and those without technical skills. The workplace has had to keep up with those technical changes. Like Postman, there are many in America who do not believe that technology is the answer. The investment in technology has been a burden on business and education in the past decade. The following quotation from one of President Kennedy's speeches tells the story:

I think the United States should be a leader. A country as rich and powerful as this, which bears so many burdens and responsibilities, which has so many opportunities, should be second to none. And in December, while I do not regard our mastery of space as anywhere near complete, while I recognize that there are still areas where we are behind--at least in one area, the size of the booster--this year I hope the United States will be ahead. And I am for it. We have a long way to go. Many weeks and months and years of long, tedious work lie ahead. There will be setbacks and frustrations and disappointments. There will be, as there always are, pressures in this country to do less in this area as in so many others, and temptations to do something else that is perhaps easier. But this research here must go on (Kennedy, November 21, 1963).

The technology that we use in this country today is necessary to our existence. In banking, the government, the military, the space program and education could not do their jobs without it. Even this country's future energy needs may depend on the space program. "Scientists estimate there is about 1 million tons of helium 3 on the moon, enough to power the world for thousands of years. The equivalent of a single space shuttle load or roughly 25

tons could supply the entire United States' energy needs for a year." (Wakefield 2000)

The space program could mean the continuation of our life, as we know it with its ability to supply us with energy needs. The medical field is another area in which we exist in this world as a superpower. Even Neil Postman alluded to the fact that we have so many advancements in the medical profession that it could be causing us to do things that are unnatural. He mentioned giving birth by *Cesarean Section* (Postman 1993). Many doctors do not wait on the natural ability of a woman to give birth because they are so quick to use technology and operate so quickly.

Is technology good or bad? Has it made us into the superpower that we are today? It is like a double-edged sword. It can be both good and bad. America, indeed, could not do without computers and the Internet because they are the tools that so many jobs depend on. Computers and technology has helped us to beat the Soviets in the race for space. It has helped us win the "Cold War." It has helped us in education to help graduates enter the increasingly skilled job market. It has helped the medical profession help women to give birth in difficult times. However, has technology made us elitists in the world as Postman has suggested? Has this turned many nations against us because we are the "haves" and they are the "have nots?" This is probably true, but this writer believes that technology may be the Noah's ark that will help mankind to survive whatever disaster occurs in the future. Is technology going to lead us to our destruction or is it going to be our salvation? Perhaps it will be both.

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