Education experienced by foreign-born faculty whose native countries have undergone major socio-economical changes

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Abstract: Three professors of education reflected on education in their countries of origin, and compare their education with learning, teaching and the education in the United States. The three countries represented are China prior to the political and economical reforms starting from 1979, Iran prior to the Islamic Republic of 1979, and the Russian Federation of the Former Soviet Union prior to the fall of the Soviet Union in 1991. Certain aspects of education such as the curriculum, pedagogy, length of schooling, methods of teaching, the textbooks, and priorities and goals of schooling in each country are discussed. This article is a comparison of the educational system of each country with the American educational system as well as among the three countries. The article concludes with each author offering some ideas on how the American educational system might benefit from the experience of the other countries.

Key words: comparative education; international education; educational policy; curriculum and instruction; textbooks

1. Introduction

The quest for knowledge, truth and value has been the original reason for the pursuit of education throughout history. The roots of American educational system can be found in traditions of Plato and Aristotle and other Greek and Roman traditions. The rich heritage and philosophies embraced by the West have their roots in the Middle Eastern traditions and ideologies (Ozmon & Craver, 1999). History also indicates that the nations of the Far East such as China and Japan influenced by Confucianism have been in pursuit of knowledge, truth, and value. Education has been universally considered the medium that makes the pursuit of knowledge and truth possible.

In the past, different practices in education occurred in accordance with the philosophies, cultures and values of each nation and independent from the educational advents happening in other countries. It was usually in the case of conquest and occupation that the language, philosophy or ideology of a nation was imposed on another culture.

Advancements in communication, transportation and international relations have brought the nations together in many aspects of life such as the growth of technology, sciences and economy. The progress in any area of knowledge and expertise has created an interest among nations to scrutinize the educational system in the leading country's educational practices. For example in 1980s, American educators became interested in learning about

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the Japanese educational system when Japan became a leading power in industrial production.

During the nineteen and twentieth centuries, political powers had an impact on the education of the countries under their influence. The educational system in India and other colonies of Britain became very similar to the English educational system. After the separation of the powers in the twentieth century, the educational practices of the "eastern block" were under the influence of the Soviet Union while many non-communist countries such as Iran were influenced by western education such as that of the United Sates.

Education in the United States underwent tremendous changes during the twentieth century. It was affected by the rise of standardized tests, the prioritizing of different areas of knowledge such as math and sciences resulted from the political rivalry with the former Soviet Union, the ever-changing curriculum, the recognition of educating children with exceptionalities, and the standards movement.

The United States has traditionally benefited from the intellect and the broad experience and expertise of foreign educated individuals (Ioannidis, 2004). With new trends in technology and the outsourcing of technological expertise, it seems that at the turn of the 21st century Americans feel confident that they can rely on the intellects and skills of the educated foreigners in India, Singapore, China, the Philippines, and elsewhere to deliver the needs of the Americas in high tech industries in exchange for economic gains. The medical profession has attracted many educated physicians and nurses from abroad.

The white majority American educators have dominated instruction in the American educational system from the pre-kindergarten to the high school, as well as the make up of the faculty of the teacher preparation colleges in America. In recent decades, educators who come from foreign countries join the educational system in educating children from early childhood to the completion of the higher education and become teachers. How do these individuals view the education in their countries of origin and compare it with their learning in the American educational system?

In the twentieth century, American educators, at the level of higher education, have become curious about the curriculum and the practices of teaching and learning in other countries. Can the knowledge of educational practices in other countries inspire American educators to improve and advance the American K-12 educational system?

In the international arena, the twentieth century has witnessed dramatic events like the rise and fall of the Soviet Union, the rise of the Maoist regime in China and the reforms in China, and the establishment of the Islamic Republic regime in Iran. The political implications of such revolutions are too numerous to name and not the focus of this paper. However each of these political events have caused a new wave of immigrants and that wave included mainly the educated individuals (Manrique & Manrique, 1993) who left their countries of origin in pursuit of higher education and eventually settling in the United States as university professors and other professionals.

Faculty members participating in this study come from different countries. While China and the former Soviet Union had communism as their commonality, the education in Iran was influenced by the American educational system. All three authors reflected on common topics as it related to their own education such as: (1) a day at school; (2) knowledge most valued; (3) facts versus themes and concepts; (4) content and appearance of textbooks; (5) classroom presentation; and (6) content knowledge versus pedagogy.

Each author concluded with lessons that their countries could learn from the American educational system as well as practices that would be beneficial to the American educational system if adopted in the United States.

A brief introduction of each faculty member gives an idea of the era in which she or he grew up and the significance of that time. It must be noted that the experiences described below pertain to the individual and the region from which they are educated and should not be generalized to their whole nation.

Liang Zhao (China) received his elementary and secondary education in rural China from 1976 to 1987, which was a transitional period in modern Chinese history. Liang's years of schooling coincided with the end of Mao's cultural revolution and the establishment of Deng Xiao-ping's era of modernization (People's Republic of China, 2002).

Mitra Fallahi (Iran) grew up in pre-Islamic Revolution era in Iran when education was modeled after and influenced by American education (Hamidhaidari, 2008), and the educational opportunities were mainly available to the children of middle to upper middle class. In 1979 the Iranian Monarchy was overthrown by an anti-western urban revolution (Amineh & Eisenstadt, 2007). Three months later by the way of a referendum the regime of Iran changed to the Islamic Republic of Iran.

Iranian education included twelve years and students underwent three different levels elementary, middle school and secondary schools. Tamara Korenman (Russian Federation) was born in the former Soviet Union during the Cold War Era. Well-developed study habits, commitment to the communist ideals, international solidarity and hard work were among the main characteristics of good citizenship promoted in school during the Soviet era (Tomiak, 1992).

2. A day in school

A day in school in China differed by season and by academic level in the part of the country where the third author grew up. School met for fewer hours at elementary level than at secondary level, and in the winter than in other seasons. School days typically started at 8 o'clock in the morning. After 4 periods in the morning there was a lunch break for one and a half hours. Some students went home for lunch while others brought their lunch boxes and had their lunch in school. In the afternoon elementary schools met for two more periods and middle school and high school students met for four more periods. There was a ten-minute recess after each period. In winter, because of shorter daylight, lunch break would be shortened. The school schedule in winter included 5 periods for elementary and 6 periods for middle school. At that time schools met 6 days a week and approximately for 240 days a year. There were two vacations during the school year—an eight-week winter break and a six-week summer break. Duration of schooling in China was ten years that included five years of elementary school, three years of junior high school and two years of senior high school.

Iranian education system was designed for a twelve-year period including five years of elementary school, three years of middle school, and four years of high school. Iranian schools were in session six days a week. School began at about 8 o'clock and classes met for 4 periods of fifty minutes, there was a recess between every classes. Most students went home for lunch and returned to school for another two classes. Many elementary schools especially in cities outside the capital Tehran met for half a day due to lack of school rooms. Holidays included 13 days of Persian New Year and all the major religious holidays, and of course the celebration of the king, the empress, and their sons' birthday that were holidays observed with festivities, marches and military displays. Schools were closed for three summer months.

Russian schools were in session six days a week for four to five lessons that lasted 45 minutes each. The number of lessons increased up to six lessons a day during high school. Regular school schedules were over by early afternoon. Most students attended various after school activities and clubs, which were free of charge. Extracurricular activities such as drama, music, dance, crafts, science exploration, chess, gymnastics and other sports were highly popular in the Soviet Union. Schools were closed for summer between June 1st and September 1st.

Other holidays included a week of winter break, a week of spring break, May Day (May 1st), and May 9th, Victory Day, which marked the termination of the World War II and was a day of celebration. Russian students began school at the age of seven and graduated from high school after ten years at the age of seventeen (Tomiak, 1992).

3. Curriculum and the knowledge most valued

Public schools serve the public good. The emphasis of curriculum usually shifts to meet the social, economic and political needs at the time (Spring, 2006). This statement is true for the three educational system discussed in this study as well. The question is, "How is 'the public good' interpreted?"

In Chinese language, art, math, science and foreign languages were emphasized during the 1980s. It was believed that these subjects linked directly to national priorities, "The Four Modernizations". The motto at the time was, "One is guaranteed success if he or she is good at math, physics and chemistry". Foreign languages, particularly English, were emphasized in the curriculum as they supported the national agenda of opening up to the West. The Chinese people realized that China was left behind in science and technology and they needed to catch up. Acquiring foreign languages was crucial in learning science and technology from the developed countries.

In comparison to math and science, history, geography, fine art, music and physical education were perceived as less important in China at that time. Music and fine art were offered only one period per week. Music and fine art were terminated after the first year of junior high school while physical education continued throughout high school.

The subjects most emphasized in Iran were mathematics and the sciences, especially the physical sciences. The emphasis on math and physical science increased with the level of education. Beginning in upper elementary grades the periods of math and sciences increased. At the high school level, if students chose math and sciences as their major of study, they rarely studied any other subjects during the week. The other subject emphasized, especially during early grades, was literature. Literature was valued as an essential characteristic of a literate person. A sense of pride in Iranian literature, especially poetry, was instilled in every Iranian child. Studying literature included memorization and recitation of poetry, reading about ancient Iranian glory, and writing composition.

While math and science were highly emphasized, social studies and art were taught especially at the lower grades. In general, social studies, art, music and physical education were not given priority in the curriculum. At the elementary level students had one period of art and music per week. Physical education was a time to get out of class and run around, shoot the ball, or just hang around the playground and enjoy the outdoors.

As an indication of the emphasis placed on math and education in Iran, it is worthy to state that while major universities in Iran such as Tehran University offered programs in most areas such as literature, history and philosophy, most reputable universities in the country only offered degrees in engineering and applied sciences.

The important subjects in the Russian Federation were math, sciences, literature and history. Physical education, music and art, which were offered as part of the curriculum but to a lesser degree. Beginning at the fifth grade, students had the option of choosing a foreign language but it was not emphasized in the curriculum (Kaser, 2006). The country was closed to the outside world and traveling to foreign lands was not an option for most citizens. National defense had an important place in the Russian curriculum as well. Beginning in seventh grade, all Russian children learned about chemical and psychological impact of nuclear power and how to protect themselves in civic classes.

Overall, ideology, more than any specific subject matter, was emphasized in the Russian Federation, as in the rest of the Soviet Union. The Communist Party emphasized ideas of becoming the superpower to confront

capitalists and children had to become prepared for the confrontation (Semykin, 1989). There was a portrait of "Grandfather" Lenin to inspire students to succeed in school following his slogan "To study, to study, and to study".

4. Facts versus themes and concepts

When the subject matter is taught to students, the emphasis may be on facts or themes and concepts, which in turn may be taught through concrete examples and hands on experiences or through abstract thinking. In this section, we will discuss what was emphasized and how subjects were taught in these three countries comparing it with teaching methodologies in the United States.

The Chinese schools seemed to emphasize themes and concepts over facts and abstract thinking over concrete examples. In contrast, American schools seem to focus on facts and on using manipulative. For example, it is common to find M&Ms or beans in an elementary classroom in the United States when a teacher teaches math. Chinese math teachers did not use manipulative as much as American teachers. The emphasis in Chinese education was on developing children's mathematical thinking ability. They would start with examples of real objects and move to teaching abstracts (ZHANG & ZHOU, 2003).

In Iran, facts were taught through explanation of formulas and principles on the board or in lecture format. There was no effort to present facts in concrete format. Manipulative was not used when teaching math or science and only in some high schools did students experiment in science laboratories. Facts were to be memorized and used in solving problems in mathematics and science, especially problems in physics and chemistry. Teachers rarely discussed the application of facts and theories. There was no effort to link facts or theories to real life, with the exception of some examples. There was no inclusion of visual and aesthetic approaches to teaching. Aesthetics and creativity belonged to an art class, but art was not considered important in the curriculum. Teachers lectured in social sciences and students were expected to memorize the topics and answer factual questions. Teachers were not expected to be creative, they were supposed to be knowledgeable and impart their knowledge to the students.

The National Curriculum of the Russian Federation prescribed the themes, scope and sequence, as well as the amount of time for each theme. Hurn and Burn (1982) in their study of the educational systems of the world regions concluded that: "The Soviet Union, France, and Japan are identified as highly centralized systems in comparison with the structure of these systems and those of Western Europe (mixed local, regional, and central control), and America and Canada, where local control is usually decisive" (p. 82). The centralized curriculum required teachers to use the unified textbooks approved by the Ministry of Education.

Since curriculum was prescribed, teachers were occupied with searching of examples to demonstrate application of the concepts. Time spent on conducting activities and experiments were considered as the most memorable learning experiences for students in Russia.

Beginning in the fifth or sixth grade, a research paper assignment became a common way to assess student abilities to discuss how facts illustrated the concepts taught and how theoretical concepts could be applied in real life. Problem-solving was emphasized on each subject. Writing in all subjects was another area that was emphasized. Students individually wrote narratives and stories. The writing was usually assigned as homework. Essay writing was the most challenging type of homework for students. Every week students had to write at least two essays on different subjects. Family members were encouraged to participate in the brainstorming and proofreading stages of the essay writing. The grade for a writing assignment reflected students' ability to discuss learned themes and concepts, application of these concepts in the real life, as well as flow of ideas, sentence

structure, grammar and punctuation.

Mathematics, physics, chemistry, and biology were also among important subjects of curriculum of that time. American educators still discuss the effect of the Soviet Union's Sputnik satellite on science and mathematics education in the US at the time of its launch in 1957 (Cavanagh, 2007). The change in curriculum in schools of the Soviet Union resulted that algebraic concepts such as finding the value of "x" and "y" were covered in mathematics beginning as early as the second semester of the first grade.

5. Content and appearance of textbooks

The content taught to Chinese students in the 1970s and 1980s was dry but solid. In comparison, the content in American textbooks is interesting, but seems to lack substance. The appearance of the Chinese textbooks at that time was anything but appealing: There were few illustrations or other kinds of images and the books were black-and-white instead of colored.

The purpose of textbooks in Iran was to present facts. Pictures, graphs and other illustrations were occasionally included. Pictures could be found more at the textbooks at the lower grades. In high school, it was possible to take a course in a subject like chemistry, which was heavily focused on the content and presentation of knowledge, without any illustrations at all. Every textbook included, at the beginning of the book, pictures of the three members of the monarchy, the shah, his empress and his son.

In the Russian Federation textbooks were developed to support the National Curriculum approved by the Ministry of Education of the Soviet Union. Textbooks were products of a group work of the experts in the field. Focused on theories and scientific concepts, textbooks chapters contained colorful visuals and were supplemented with questions and activities to stimulate learning of an individual. Scope and sequence of the textbooks were strictly aligned with the scope and sequence of the curriculum. Teachers followed the textbook to ensure meeting of the timeline to finish the book and thus, to complete the study of the required materials by the end of the school year. Textbooks were colorful and appealing for students of that time. They were an appropriate size to carry to and from school to be able to utilize them for homework.

6. Classroom presentation

The presentation format in Chinese schools was predominantly lecture. Lecture after lecture, from the morning to the afternoon, 6 days a week. So, students generally liked music, fine arts and physical education classes, where they could have a break from the lectures.

There could be some questions and answers toward the end of the class, but it was not common practice. The teacher asked questions at the beginning of class to check prior knowledge or review content taught in the previous period. Students did not usually ask questions; they accepted the subjects taught to them. They could ask questions if there was anything that they did not understand, but there was usually little or no time left for questions. The students were not supposed to question the teacher. Group work and class discussion were uncommon. Drill and practice were common in math and science. Students needed to recite major texts in language arts. Tests played a significant role in education. Students took numerous practice and final tests. Tests were the major form of assessment.

In Iran the teacher lectured or wrote on the chalk board and students copied down facts, formulas and principles and did assignments as directed. Most teachers allowed students to raise their hands to ask or answer

questions. Students were also asked to go up to the board to present an assignment, like composition, or to solve a problem in math or science while the rest of the class copied. Seats were arranged in rows. Group activities were never utilized. Students had to memorize poems, facts such as the capital of each province and each country in the world, and the formulae in mathematics and science. Iranian students spent a few hours every night on homework. They were assigned homework even during the weekend and holidays.

Like most elementary schools in the United States, the elementary classrooms in Iran met in the same class for all subject and with the same teacher. Unlike the United States, the secondary schools students met in the same room for all subjects, as well. However, secondary teachers moved from one room to another.

Classes in Russian Federation were well structured. They usually started with the review of homework for the first fifteen minutes. Several students were assigned to answer questions displaying their answers on the board. Other students were given note cards with the questions to be answered in writing. While these two groups prepared to answer their questions, a couple of students answered the questions orally. The whole class participated in the homework review. After the homework was thoroughly checked, a teacher lectured explaining a new concept and connecting it to the questions discussed during the homework review. Science teachers often demonstrated experiments to support a science concept. Humanities teachers supported a lecture with a demonstration of art paintings, listening to recordings and reciting poetry. Students were required to take notes from early grades. Taking notes was very important for successful completion of homework. After a lecture, the teacher assigned and explained the homework which students had to record in their planners. All classes but physical education and visual arts had a similar structure throughout school years.

The most important part of our daily schedule was the completion of homework, which was thoroughly discussed in class. Students had to spend at least 3 hours a night on homework, a majority of which was done during the time when parents were home, so they could help by explaining problems that were not understood in class. Going to school without completed homework was not considered an academic misconduct; it was a shame!

7. Content knowledge versus pedagogy

Gutek (2004) defined pedagogy as “the art, science, or profession of teaching” (p. 236).

In rural China in the 1970s, not all teachers received proper teacher training. Secondary school teachers were better trained than elementary school teachers were. Most teachers were trained at vocational normal schools, which they attended after they were graduated from junior high school, while some teacher were trained at the college level. Teachers working in urban schools were better educated. As SHEN (2001) points out, elementary school teachers usually received some teacher education during high school years while secondary school teachers received post-secondary education.

Pedagogy as a foreign term was introduced to Iranians through translation of foreign books especially socialist literature. There was not even a translation for the word in Farsi, so the French or Latin pronunciation was used. Iranian teachers were expected to be knowledgeable and impart their knowledge to their protégés. Outside of a few good schools in Tehran and other big cities, Iranian teachers taught in the elementary schools after graduating from high school. To teach math, science or literature at the high school level, teachers were expected to have a degree in the area in which they taught, but not all teachers met the requirement. The most well known teachers were those who were knowledgeable in the area of their teaching and held high standards.

Although there were colleges of teacher education established in Iran during 1960s and 1970s, graduating

from a college of teacher education was not a requirement for becoming a teacher. Additionally, the number of graduates from those colleges did not meet the required number of teachers for the country and unless individuals came from a region outside of the capital, they would not go to a region outside of Tehran and other big cities to teach. The majority of elementary teachers were women. Most math and science teachers were men. Iranian teachers especially high school teachers, were well respected in the society but more importantly teachers had authority in the classroom, which helped maintain order in class.

Pedagogy was very important in the Soviet Union, thus Russian Federation, and teachers were highly respected in the society. Teacher preparation was assigned a significant role for building educational system in the Soviet Union (Kaser, 2006). A high school graduate who wanted to become a teacher could follow one of three paths. Three-year colleges prepared those who wanted to become elementary or early childhood teachers. Pedagogical universities had five-year programs preparing those who intended to teach at the secondary level. High school graduates entered these programs to master in a subject that they intended to teach such as mathematics, history, geography, literature, etc. Students at pedagogical universities also received training in methodology of teaching their subject area (methods of teaching their subject area). Individuals who chose to pursue liberal education would enter state universities receiving coursework in general education, several courses in methodology of teaching, and they were involved in extensive studies related to their discipline and research within the discipline. The duration of a university program was five years. Graduates of the universities could work as teachers, as researchers in a laboratory, or as experts in industries (Steiner & Khamsi, 2006).

Quite often for the purpose of expanding their teaching credentials and professional development, graduates of colleges or institutions would register in professional development and continue education programs. These programs were called distance learning where the individual received instruction and communicated information and assignments through the postal system.

To be a qualified teacher, an individual had to be knowledgeable in the content area, have high expectations of students, be creative in conducting activities that met curricular goals. A good Soviet teacher was expected to be dedicated to the profession by being available to students not only during school hours, but also evenings, weekends and holidays (Tomiak, 1992). Stories, songs and poems about teachers are well known to the Soviets. The image of the teacher was a middle age or older woman with caring look and encouraging smile on her face. Female teachers were in majority of all subjects and at all levels of education.

8. Conclusion

In conclusion, each author reflects on education in their country and their learning as a new comer to the United States. Reflections in this section are stated from each individual's view point to indicate their personal experiences.

China: The late 1970s through the 1980s was the period when China was returning to normalcy, recovering from the wounds of the Cultural Revolution. Academic learning was restored, with an emphasis on language arts, math, sciences and foreign languages, which were expected to contribute to the industrial, agricultural, defense and scientific and technological modernizations. K-12 education in China today is quite different, which is important for readers to keep in mind.

The Chinese can learn much from the American educational system, but the most important part is the humanistic approach. Compared to their Chinese counterparts, American educators care more about students' psychological and social wellbeing. In the Chinese educational system, academic achievement was the first

priority, and developing inter-personal and intra-personal skills was secondary. Students were under tremendous pressure to excel academically. The pressure came from both the school and the family.

There are lessons that Americans can learn from the Chinese educational system, too. The Chinese experience shows that children are able to learn more and achieve more. In American school, teachers do not challenge students enough. American students need more academic rigor. Teachers need to expect more from students. American policy-makers have realized the problem (students do not achieve to their full potential) and have started the standards movement. They fear that America cannot really compete in the global economy if American students do not achieve academically as high as their counterparts in Asia and Europe.

Iran: There are some characteristics of American educational system that can be beneficial if adopted by Iranian educational system. One of the characteristics is the separation of church and state. Lack of freedom of expression that dominated the educational system was counterproductive to free thinking. At early ages, children learned to become accustomed to two different ways of expressing themselves, among the trusted ones in the family and in private circles, and outside of the house and especially at school.

The second aspect of American education that is good for Iranian educators is to not overwhelm students with homework, especially during holidays. The authors remember how they were expected to complete a huge amount of homework every night, each weekend, and even during holidays. Maybe the practice helped their academically but the miseries that doing homework instead of having fun created took enjoyment out of schooling.

Another aspect of American education that the authors find very helpful is using objects, hands on experiments, and manipulative in teaching young children new concepts such as mathematics and sciences. Last but not least the authors wish that punishment, physically, verbally or through giving additional assignment did not exist in education and that teachers were more caring and less of an authoritarian figure.

In retrospective, the authors believe that there were some aspects of Iranian education that could be beneficial if adopted by the American educational system. Like many American educators the authors wish that American educational system was not so dominated by standardized tests. The authors believe that teachers and administrators have to be held accountable for educating all children but the authors believe that standardized tests have harmed the educational system and children more than helped them.

In Iran all students who wanted to enter the Iranian universities took a national standardized test. Taking the test created enormous anxiety for high school students and their families but at least it was once during their twelve years of education and it resulted from the reality that colleges did not have the capacity to admit all the students interested in entering colleges and the universities. The authors cannot imagine going though such anxiety every year.

The other aspect of the authors' education that they cherished and found lacking in American education is that although we did not have colorful and picturesque textbooks. Textbooks were not as heavy but had the needed material and all the material covered. We purchased and owned our textbooks, new or used, took them home, and parents had access to them to help us with assignments. We did not use any worksheets even though the amount of homework and assignments required which was incredibly higher. Teachers developed assignments and homework, which was directed and tailored for their students. The authors find the control of textbooks by publishers, lack of access to textbooks at home by parents and children, and the development of such textbooks and the associated material, especially the tests developed by individuals who are not directly involved in education extremely troublesome. The efforts by schools to protect expensive textbooks have resulted in proliferation of work sheets that reduce studying the concept thorough to memorize a selected few aspects of the concepts.

Russian Federation (Soviet Union): As an educator in the United States, the authors have learned different

approaches to teaching and learning. The authors believe that some of these approaches would benefit Russian teachers and students. First, the authors would suggest reduction of the amount of scientific facts and concepts taught in grades 6-12. The amount of information covered was overwhelming along with the homework and tests that accompanied the content. Second, the authors would suggest that teachers utilize interactive learning in classroom by including group discussions, projects, and other hands-on activities that develop students' skills to make choices and take responsibilities for their own learning (Post, 2005). Third, the authors believe many parents and students would appreciate the experience of inclusive classrooms for students with special needs and disabilities. In Russia, students with special needs attend special boarding schools where they communicate with peers with similar disabilities and lack interaction with the world outside of their boarding school and the family.

In retrospective, the observation of current trends in the American Education makes the authors think of several approaches practiced in the Russian schools that would benefit American education. First, the authors believe that the value of math and science disciplines would rise if the math and science curriculum is clearly defined in the scope and sequence and the time for teaching these subjects is expanded. Second, the authors believe that developing after school programs that would promote activities to connect and apply math and science concepts to the real world would increase students' interest in studying math and sciences. Such math and science clubs would create an opportunity to experiment and explore math and science concepts for students and help them become engaged in the study of these disciplines. Third, the authors suggest that American teachers emphasize on writing in all grades and all content areas. The development of logic and other higher-level thinking that improves self-discipline can be enhanced through writing. The authors believe that expanding students' engagement in writing will create better writers and better thinkers. These qualities will produce better communicators in the workplace, as well as in the global community.

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