Setting Realistically High Academic Standards and Expectations

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Abstract

The present article is an overview of current academic expectations in the U.S. education system. It starts with a brief introduction highlighting the importance of expectations in education. Then, the current, undesirable situation of the U.S. education system is illustrated through international comparisons of student achievement and academic expectations followed by a discussion of how well schools in the U.S. prepare students for the future in the face of a highly competitive global workforce. The paper proceeds with its central argument, presenting evidence from all levels of the education ladder, that low expectations play a crucial role in the overall low student achievement. Given the pervasiveness of low expectations, the article concludes with original recommendations that will help create a pool of high but realistic academic standards and expectations for all levels and populations in the education system.

Relationship between expectations and success

Success in any meaningful endeavor is marked by a history of high expectations that provide the challenge and inspiration necessary to press the individual to his/her highest level of performance. Though there are supportive components of success - environment, general and special abilities, personal work habits and attitudes, and even chance (Tannenbaum, 1997) -, the central factor is high expectations. One's own expectations of oneself are important in the sense that people usually set their goals first and then develop their action plans accordingly. Others' expectations of individuals are also critical, since people tend to strive to accomplish what is expected of them. In both cases, without high expectations, individuals invariably drift toward mediocrity or even failure.

The case is no less true in education[1]. The strong relationship between expectations and academic achievement has been well established both theoretically and empirically (Johnson, Livingston, Schwartz, and Slate, 2000; Marzano, 2003). Schools with exceptional levels of academic achievement consistently demonstrate high expectations and goals supported by data-driven collaboration and ongoing assessments (Schmoker, 2001). Within the individual classroom, there is a clear correlation between teacher expectations and student achievement. "High expectations represent an overall orientation toward improvement and growth in the classroom, which has been demonstrated to be a defining characteristic of benchmark schools…. Effective teachers not only express and clarify expectations for student achievement, but also stress student responsibility and accountability for striving to meet those expectations" (Stronge, 2002, p. 37). Perhaps as important as expectations by schools and teachers are parents' academic expectations for their children. Parents' expectations have been shown to be a significant predictor of student success across age groups, races, and nationalities (Seginer, 1983; Kaplan, Liu, and Kaplan, 2001). For this reason, the relationship between expectations and achievement has remained a recurring theme in education reform discussions since Ronald Edmonds spawned the effective schools movement (Thomas and Bainbridge, 2001). Certainly, there are other factors that augment high expectations, but the linchpin of academic achievement is high expectations. Even if educators could straighten out all of the supporting factors - finance, teacher quality, equity issues, etc. -, without high academic expectations for themselves and/or high expectations of others for them, students would still not reach high levels of achievement.

Current situation

The challenge to the educational establishment, therefore, is how to keep academic expectations high for all students. However, as can be seen in the following sections of this paper, we consistently find low academic expectations lurking behind low levels of student achievement in U.S. schools today.[2] In international comparisons of academic achievement, U.S. students lag behind their global counterparts. Similarly, academic expectations for U.S. students also lag behind world standards. In addition, many young people are finding themselves unprepared for the current and future global workforce. But once again, the general academic expectations across the scope of a public education are low, not matching the levels of accomplishment necessary for future employment and success. In fact, up and down the educational ladder from kindergarten through university, students are not well prepared for subsequent levels of study. Educators from kindergarten through college must wrestle with students who are ill prepared for advanced studies because the expectations preceding their level of study have been low.

International comparisons

It is not difficult to argue that the U.S. achievement edge in math, science and related fields of research and development is eroding. To begin at the top of the ladder, doctoral programs in these fields, which are supposed to prepare American scientists and engineers, are filled with foreign students. For example, in 1995, one-fourth of all doctoral degrees in natural sciences and one-third in engineering went to foreign students. Moreover, indicators show less and less involvement of Americans in these fields. A growing percentage of all doctoral degrees awarded in the U.S. in science and engineering go to foreign students. In addition, more and more of these foreign students are leaving the U.S. after their education (National Alliance of Business, Inc., 1999).

Furthermore, data from international comparisons of student achievement in mathematics and science consistently place U.S. students well behind their counterparts in advanced, industrialized nations (Peterson, 2003). More troublesome is the trend shown by the data from TIMSS (Third International Math and Science Study) that the achievement gap between the U.S. and other industrialized countries grows through the schooling years from age 9 to age 17 (Peterson).

If we ask why, we will discover that there are clear differences in academic expectations. Expectations for U.S. students are simply lower than those for their international counterparts. Expectations for achievement are lower and expectations for effort and study habits are lower.

Curriculum demands are higher in those countries whose student performance is high. These countries provide their students with a common, coherent curriculum that is much more challenging than in most U.S. schools (Schmidt, 2004). Despite differences in pedagogy and teachers, Schmidt holds that curriculum supporting high expectations is the most important difference between countries with high achievement and the U.S. For example, all high achieving countries teach Algebra in the 8^{th} grade but one third of U.S. middle schools do not even offer Algebra. Countries with high expectations introduce algebra and geometry topics in the middle grades, while 80 % of U.S. 8^{th} graders were mostly studying arithmetic topics such as fractions, decimals and percentages (Schmidt).

While data show that curriculum-based external exit exam systems improve student achievement and objectivity in assessments (Bishop, 2001), U.S. educators balk at affirming meaningful exit exam requirements. In a study of high school exit exams on six states, Achieve, Inc. (2004) reported that these states required mathematical skills that children in other countries learn in middle school. In a very telling comparison, the reading and writing skills expected on these exams are two grade levels below what students will face on the ACT college-admissions

test (Achieve, Inc.).

Not only are curriculum expectations higher in comparable, advanced countries, but so also are expectations for effort, attitude and study habits. For example, Chinese high school students in Taipei (Taiwan), who scored higher than the U.S. students in mathematics, have been found to spend more time on after-school instruction and studying than U.S. students (Fuligni and Stevenson, 1995). Similarly, factors associated with higher mathematics scores of Japanese and Chinese students than those of U.S. students included higher standards held by their parents, having more positive attitudes toward achievement, and their stronger belief that studying is the major means for academic success (Chen and Stevenson, 1995).

A good example of disparities between the U.S. and other industrialized countries in terms of after-school expectations from students is part-time work while in high school. According to a survey done in the U.S. by the Bureau of Labor Statistics, 26 % of 16-year-old students and 39 % of 17-year-old students worked during the school months of 1996-1998; and, on average, they worked 17 hours per week (Bureau of Labor Statistics, n.d.). Though part-time work is common among U.S. high school students, the facts about part-time work are striking. First, most adolescent part-time work is not because of financial need; the higher the family income; the greater is the probability that a teen would work while in school (Wright and Carr, 1995); adolescents spend their earnings for goodies like designer sneakers that their parents won't pay for (Saks, 1993). Second, most adolescent work is not a part of school-to-work transitional programs, and therefore, unsupervised (Stone, Stern, Hopkins, and McMillion, 1990; Graves, 1992). Third, most adolescent part-time work is in the fast-food sector with few skills to acquire or transfer to other jobs; these jobs are filled by adolescents only to meet the demands of the sector through minimal wages (Stone, et al.; Graves). Fourth, teachers lower their expectations if they have a large number of students working long hours, therefore having a spill-over effect on the overall teaching-learning environment, including those who do not work (Goldstein, 1991). Fifth, part-time work has significant negative correlations with a number of behavioral and academic outcomes, including delinquent behavior, alcohol use, academic achievement, and attendance (e.g., Marsh, 1991; Steinberg, Fegley, and Dornbusch, 1993). Yet only in the U.S. is part-time work widespread among high school students; while it is rare in other industrialized countries, where students are only expected to continue their education (Lillydahl, 1990; Steinberg and Dornbusch, 1991). Obviously, high school students in the U.S. will be at a disadvantage when compared with their counterparts in other advanced countries, given the amount of time they will spend on their homework and/or after-school learning.

This comparison of achievement and work expectations is well illustrated in a recent report by the National Foundation for American Policy. According to Anderson (2004), the author of the report, foreign-born high school students comprised 50 % of the 2004 U.S. Math Olympiad's top scorers, 38 % of the U.S. Physics Team, and 25 % of the Intel Science Talent Search finalists. By some accounts, 60 % of the top U.S. science students and 65 % of the top mathematics students are the children of immigrants. Why the disproportionate representation? Anderson provides anecdotal evidence from the families who support these academic stars that they maintain higher academic expectations for their children than the schools they attend.

Future workforce and global economy expectations

For continued economic prosperity of the U.S. in the 21st century, academic expectations must be tied to the demands of the global economy. However, we are witnessing a steady decline in the preparedness of the U.S. workforce and, in turn, a gradual eroding of U.S. stature in scientific, technological, and economic prominence.

During the first half of the 20th century, the U.S. maintained a competitive edge on research, development and productivity. This edge, especially in scientific and technological development, was a linchpin for U.S. leadership in economic growth and productivity (Dye, 2004). Much of that edge found its roots in a superior

education system. However, during the last 50 years, other countries have learned and adapted. They have recognized the demands and necessities of the future. Their investment in the education for their labor force is increasing, while the U.S. investment declines. We are seeing how their graduates are gaining upon and, in many cases, surpassing the performance of our graduates (National Alliance of Business, Inc., 1999). But, despite the fact that our world has been changing dramatically during the course of the last 75 years, our educational system has changed little (Sclafani, 2004).

David Baltimore, president of the California Institute of Technology and a Nobel Prize winner warns, "We no longer have a lock on technology. Europe is increasingly competitive, and Asia has the potential to blow us out of the water" (as quoted in Dye, 2004). Lee Dye, the commentator quoting Baltimore, adds, "The country has largely ignored the exporting of blue collar jobs with the expectation that our national calling was to a higher level. Let the rest of the world do the menial tasks. We'll build the supercomputers and the high performance aircraft and all the other high-tech gizmos that only a country such as ours can produce." However, with the U.S. losing its edge on science and technology, "…companies like Intel and Cisco are opening plants in those countries to take advantage of cheap labor. Not on the assembly line. In the labs, where breakthroughs are needed to stay ahead of the competition. That used to be our turf."

Between 1950 and 1997, the proportion of American jobs classified as unskilled dropped from 80 percent to 15 percent. But the growth in demand for engineers and scientists is soaring, projected to increase by over 50 percent in the next decade (Rhodes, Jones, and Oliver, 2003). Many jobs that once required little knowledge of mathematics, for example, now call for various skills in algebra and measurement. According to an industry-wide standard, an entry-level automobile worker should have the knowledge to apply formulas from algebra and physics in order to properly wire the electrical circuits of any car (U.S. Department of Education, 1997). The U.S. economy's structure has shifted to a knowledge-based economy and has increased the need for workers with reasoning, problem-solving and behavioral skills (U.S. Department of Education, 2002).

Young Americans are not being adequately prepared for meaningful, productive participation in the 21st century. At Boston Fed's 47th annual conference, experts across political and economic perspectives were unanimous in their dissatisfaction with the current education system in the U.S. They agreed that, to meet the demands of today's world, educational performance of students must improve (Kodrzycki, 2002). For the U.S. to remain competitive, it must educate its children, its future workforce, on levels commensurate with the best educational standards in the world. When educators discuss standards and expectations for U.S. students, they must do so in an international context. Otherwise, our youth will be put at a very critical disadvantage in the job market. In an interview with Deborah Perkins-Gough (2003), Heidi Hayes Jacobs, author of curriculum mapping, claims "although we say we want to have world-class scientists, we often see a lack of rigor in science programs in the U.S.... If you want to have world-class achievement in science, school districts must provide more support in middle and high school to our first-string science students"(p. 14). On raising expectations, she cites the success of rigorous science programs in New York State high schools, which empowered their students to win almost 25 % of the Intel-Westinghouse Scholarship Awards (Perkins-Gough). Joyce VanTassel-Baska (2003), a leader in gifted education, adds, "Globalization, strengthened by the explosion of information technologies, has reshaped our thinking about curriculum and instruction in fundamental ways. We no longer can use just national standards to judge our educational systems; we must use international ones as well" (p. 35).

Low expectations across K-16

It is really not surprising that academic expectations and achievements are low in relationship to international comparisons or to future workforce demands. Low academic expectations plague the U.S. curricula from kindergarten through the university and on into the business world. Low academic expectations are a central reason

why students appear at the sequential rungs of the educational ladder unprepared for the work at hand. Whether students come to the first grade unprepared to read, or whether they reach the university unprepared for college level work, the problem is similar. Low academic expectations at preceding levels result in unprepared students for the next level of study or work.

It has become ever more common for incoming college freshmen to need remedial courses in math and/or English. But much of the blame for unprepared students can be attributed to low expectations in high school. The research supporting the value of a challenging curriculum in math, science, and English in high school is well established. Taking more challenging courses in high school results in greater success in college (Trusty, 2002) and affects completion versus non-completion of a college degree (Trusty and Niles, 2003). But it seems the research goes unheeded. In a report by the National Commission on the High School Senior Year (2001), it is noted that 13 percent of students at private four-year colleges and 41 percent at public two-year institutions require remediation.

It would be easy for the universities to lay all the blame for unprepared students at the feet of high schools; however, it appears that universities have also allowed themselves to follow the track of low expectations. The National Association of Scholars (2002) reported that college graduates of today barely knew more than high school students of 50 years ago. Furthermore, in America's colleges and universities, only one in three now demands courses in English composition. Only one in seven still has literature requirements, and one in eight continues to insist on the study of math (Ludlow and Clark, 1997). At a majority of universities, even English majors no longer are required to take a course on Shakespeare, a critical foundation for the understanding of English literature. National Alumni Forum (1996) study, "The Shakespeare File: What English Majors are Really Studying", provides insight into declining academic expectations and the growing failure even to acknowledge the need for standards.

But there seems to be more than enough blame to go around. Low expectations in universities and high schools simply follow the trend of low expectations in the elementary and middle schools. Graduation from either high school or college is often predicated upon expectations in elementary and junior high school. Low academic expectations at these levels force low expectations at higher levels. In other words, for students to be able to pursue a strong high school curriculum, expectations must be high at the elementary and middle school level. A recent report from the Brown Center on Education Policy (2004) found that mathematics expectations for 4^{th} and 8^{th} grade students as reported by the National Assessment of Educational Progress fell far below the actual grade levels being assessed. Achieve, Inc. (2002) also found that, in 21 state tests of eighth-grade students, more than 60 percent of the test items dealt with computations, whole numbers, and fractions - procedures that students in most countries master before the seventh grade. Whether intentionally or not, the academic course for middle schools attends more to organizational issues and developmental needs of students rather than academic issues (Lewis and Norton, 2000). Since it lacked academic rigor, the National Middle School Association, in the early 1990's, called the middle school curriculum the "neglected element in the middle school movement"(as quoted in Lewis and Norton, p. K5).

The science curriculum does not fare much better. The National Science Board (2004) reported that the proportion of U.S. citizens who are qualified to fill science and engineering jobs is declining. In 1975, the U.S. ranked third in the world in the percentage of students seeking natural science and engineering degrees; now, it is 17^{th} (National Science Board). But while college students' interest in obtaining a degree in natural science or engineering wanes, U.S. schools maintain low expectations in science. One third of the nation's elementary students receive science lessons less than three times a week (Galley, 2004). Despite strong evidence that preparation for science and engineering careers begins early in a child's education, a study by Bayer Corporation (2004) found that elementary teachers were woefully unprepared to teach science.

Another case in point for low expectations across K-16 is the writing curriculum. To begin at the top of the ladder, many notable universities have recognized that they have had a history of poor writing instruction and that

their students do not write well (Bartlett, 2003). But, as with mathematics and science curriculum, problems in writing have roots in secondary and elementary schools. At the high school level, seventy-five percent of seniors never receive a writing assignment in history or social studies, and, for the most part, the extended research paper in the senior year has been abandoned (Lewin, 2003). At each of the grade levels of 4, 8, and 12, only about one-quarter of students scored at or above the proficient level, and only one in one hundred at the advanced level on the NAEP exam in writing (National Commission on Writing, 2003).

We can trace low expectations in the U.S. education system back to early childhood education. Despite the evidence that high-quality daycare produces long-term positive effects, the United States, in contrast to many other advanced countries like Sweden, does not support a national effort to provide high-quality early childhood education to all children. Low academic expectations at this age result in life-long deficiencies in academics and earnings (Kagan and Hallmark, 2001).

But even if good early childhood education programs are in place, their achievements are soon undone in early elementary school. Most studies find that Head Start improves school readiness, as measured by achievement test scores (Oden, Schweinhart, and Weikart, 2000). But initial advantages of Head Start fade during the elementary school years as achievement scores begin to resemble those of non-Head Start participants. Ferguson and Mehta (2004) argue that the most likely reason is that inferior schools fail to challenge and motivate these students.

Research and professional opinion are not needed for many parents to recognize that the success of their children hinges on high expectations. Parents who take an active interest in their child's education can easily recognize schools with low expectations, and, if finances permit, they opt for schools where high academic expectations are the norm. Another indication that many parents recognize low academic expectations in their schools is the rise of private tutoring services like Sylvan Learning Systems, Inc. and Kumon Mathematics. Because these parents believe that the public school system fails their students, they are seeking help that will keep their children on the path of high achievement (Clayton, 2000).

Particularly striking are the effects of low academic expectations on gifted students. Our population of gifted students is one of America's most valuable resources. It is fair to say that, from this pool of students, many of our future leaders will emerge. Research affirms that the development of their potential rests, in part, on high expectations (Dalzell, 1998). But, in academic achievement comparisons with international students of the same ability, these students perform poorly. It is suggested that the low scores for gifted students on international tests may result from persistently low academic expectations along the educational pipeline beginning in elementary school (Callahan, Tomlinson, Reis, and Kaplan, 2000). Not only are expectations low for the gifted learner, but also the programs for gifted and talented youth have been reduced disproportionately compared with services for students with other special needs (Winebrenner, 1999). Colangelo, Assouline, and Gross (2004) argue that the gifted population is actually left behind academically by the education establishment. In study after study, they write, academic challenge is lacking in the regular classroom, "...we are quietly and, ironically with good intentions, lowering our national standards from excellence to baseline competence" (volume 1, p. 3).

Some of the decline in academic expectations and achievement can be traced to the lowering of textbook standards. Ravitch (1996) cites a study by professors at Cornell University, which found that the vocabulary in textbooks that became easier and easier since World War II resulted in a cumulating deficit in students' knowledge base and verbal skills. In addition, conservative and liberal special interest groups have taken a heavy hand in designing the textbooks and standardized tests in the U.S. Imposing their agenda upon the process effectively lowered the quality of material (Ravitch as cited in Bourge, 2003). For example, Stotsky (1999) claims that, in elementary textbooks, the standards of literacy have been lowered in the name of multiculturalism.

The picture of low academic expectations versus high comes into sharp contrast in the context of education

among the urban poor. Jerald (2001) points out that despite recurring, dismal statistics for poor urban schools, these schools are not doomed to failure. He identifies 1320 high-minority, high-poverty schools in which student standardized test scores were in the top one third of their state at respective grade levels. The reason? High academic expectations. Understanding the complexity of poor urban school performance, Lee (2003) writes that at least part of the remedy is to raise academic expectations for all students and direct all available resources toward helping students fulfill them. In her book titled "Learning While Black", Janice E. Hale (2001) claims that the academic failure among the urban poor, and especially among African American students, can be attributed to the recurring theme of low academic expectations. Hale complains that even teacher preparation courses and seminars are at fault. "Courses and seminars designed to encourage sympathy and empathy in teachers have done nothing more than cause them to have low expectations for African American and lower-income children" (p. 44).

Recommendations

Our recommendations for the pervasive malady of low academic expectations are not merely to repeat the call for high expectations. We believe this call has gone out repeatedly and there has been a great deal of outstanding work at national, state and local levels aimed at raising academic standards for all children. Such work should and must continue.

Rather, our recommendations focus on enriching the criteria base with empirical data from "real world" classrooms and school systems. Generally, the criteria base for establishing academic standards is grounded in the expertise of scholars and experienced educators. In establishing expectations and standards, they may focus on the scope and sequence of subjects, on thinking processes, or on theories about learning. This approach lays a strong foundation for devising academic expectations and standards. But it is our recommendation that this foundation be augmented with empirical data that describe "real world" achievement levels. These data would help identify standards of academic excellence across disciplines and grade levels through determining "what is possible" academically for children at different stages of their development. In this way, educators would have the empirical data necessary for establishing high, yet attainable academic standards.

We believe empirical data are necessary to establish well-defined, high, yet realistic expectations, since the vision for current academic standards and expectations is often muddled (U.S. Department of Education, 2002). The Blue Ribbon Schools program is a case in point. From 1998 to 2000, numerous U.S. schools were dubbed "Blue Ribbon Schools", yet the criteria for the award had little to do with student performance but much with the "things" the schools were doing. A "Blue Ribbon" school could claim excellence but not based on student performance measured in a meaningful context (Loveless and Diperna, 2001). The debate about middle school education since the early 1990s is another case of muddled vision. For nearly ten years, educators have questioned whether middle school students, due to hormonal activity, were able to engage in higher-level thinking (Norton, 2000). But while U.S. educators struggled with the social and emotional needs of this group of students, the world's middle school students were mastering advanced mathematics and science concepts (despite their hormonal problems) and were surpassing American students on international exams (Norton). Muddled vision can also be seen in the form of unrealistically high standards and expectations. Sometimes, in an attempt to boast of high standards, governing bodies have imposed academic expectations that were unrealistic, not based upon real world achievements, but rather on speculative hopes of the powers that be.

"Real world" data would enable schools and school districts to establish both high and realistic standards. They could be gathered from two sources: 1) "real world" contexts, i.e., actual classrooms nationally and internationally, and 2) "real world" academic sequencing, i.e., programs and systems which have consistently prepared their student bodies well for either the workforce or further education.

1. Real world contexts: The first source is "real world" contexts, i.e., classrooms that have consistently

demonstrated exceptional levels of achievement. This database would be built upon responses to the question, "What levels of academic achievement have actually been obtained on different grade levels in different disciplines?" In such a case, data would illustrate real achievement levels, not predicted or expected ones. It would provide empirical data that would support and/or refine theoretical projections. This data could be collected from local, state and/or national benchmark programs that have concrete evidence concerning the levels of achievement possible for typical[3] students at respective grade levels and subjects.

These data could be collected not only from the U.S. but also from the international community. So far, there have not been many international studies that we could use to learn about standards in other countries. As an example, the overwhelming majority of current discussions on mathematics and science education in an international context have been based on data from a single study, namely TIMSS (Third International Math and Science Study). We need more such studies that could help us further identify not only the highest level of achievement among similar aged students but also the types of instruction and classroom expectations which produce top performing students. Furthermore, such efforts should be extended to reading and writing. Of course, these studies would have to be limited to English speaking countries – Canada, Great Britain, Australia, and perhaps India – but in any case they would help us identify the highest standards of "real world" achievement and the school programs which enable high achievement.

Needless to say, a major group that is supposed to make use of the suggested database will be teachers, who are struggling with the day-to-day challenges of teaching students with a wide spectrum of abilities and circumstances. Facing many different challenges in their classrooms, some teachers may tend to discount the success stories to be provided in the database. Probably, they will argue that they do not experience the same conditions as those of the success stories. They may claim that they do not have the same resources, the same administrative support, etc. For this reason, the descriptions of 'what is possible' at different grade levels and disciplines should be rich, rather than a simple list of topics successfully taught. Teachers will be convinced that the results reported in the database are replicable in their own classrooms only when they think that their circumstances are similar to or even more favorable than the ones described in the database.

2. Real world sequencing: In addition to the data from "real world" contexts, we recommend that this new database collect information that would identify meaningful and successful "real world" academic sequencing. At the elementary and secondary level, 'meaningful and successful' means academic programming in specific schools or school systems that have prepared young people well for either the post-high-school workforce or higher education. At the junior college or university level, it means academic programming that prepares students to compete in a global workforce in the 21st century. This database would be drawn from three sources: 1) expectations and standards developed by the university community that would describe a well-prepared freshman student, 2) expectations and standards developed by an array of business leaders that would describe a well-prepared employee in respect to various employment opportunities, and 3) the proven track-record of schools, school systems, and universities that can demonstrate the success of their graduates in the post-high-school workforce, in junior college/ university studies, or in the highly skilled post-university labor force.

This database would help educators describe 'model' graduates with the attributes, knowledge, and skills a student needs for successful employment at various jobs or for further studies in different disciplines. Then, beginning with these "models", educators can work backwards to establish coursework expectations that would help insure that students acquire the prerequisites for success in their pursuits. For example, it is obvious that the course sequence that should be completed by a student who is aspiring for an engineering degree in college will be different from the sequence for a student who wishes to pursue a liberal arts degree. If the database we suggest tells us that the engineering candidate should complete the full menu of advanced mathematics courses in high school, such as calculus, pre-calculus, and trigonometry, then a carefully prepared sequence of mathematics courses should be

known to the student as well as to his/her teachers and parents. Such sequencing should incorporate timely completion of prerequisites for subsequent courses in mathematics and allow enough time for the student to complete the full sequence in high school.

Regarding the formulation of these sequences based on the demands of the workplace, we recognize that these demands are ever changing. This naturally requires periodic updating of these sequences. Such a need to update/revise would hardly be unique to this practice. Almost all practices in human life, including seemingly stable ones, undergo revision.

Another reasonable argument would be that children at early stages of their education may not have an idea as to what kind of a career they wish to pursue after their education, which would make "real world" sequencing difficult for these students. We believe that whenever the student's career choices cannot be of help, the recommended sequence should be based on the student's areas of strength. For example, if a fourth grader is really strong in mathematics, while on or below average in language arts, a sequence for a science or engineering degree should be suggested. As students continue their education from one grade level to another and their career choices become clearer, real world sequencing would prove more and more useful. From another perspective, we acknowledge that human beings are not like trains, which go on a single line and for which you can tell the destination. There may be many changes in one's thinking and circumstances along the way. This is true not only for school years but also for adulthood. Yet this does not nullify the need for guidance for any path one wishes to take. The suggested database would provide students with guidance as to what kind of a foundation they should lay for the type of ambitions they want to pursue. Besides, for a considerable percentage of students, there may not be major deviations from the original direction they have taken.

An example that combines both real world context and real world sequencing: We are recommending that any curricular decisions in schools or school districts must be backed up by empirical data. Curricular decisions should not be "in house", subjective, or political. Take, for example, the question, "At what grade level should we teach a formal algebra course?" Please note that it is not our intention here to thoroughly analyze this question from different perspectives. Rather, we intend to use it merely as an illustration of how our two recommendations can be applied on this question. To be able to achieve a "real world" context approach, we should ask when students are able to learn algebra. For "real world" sequencing, we should ask what is the place of algebra in a sequence that would lead to success (as defined by "real world" descriptors) at the end of high school.

To answer the first question, we must find out at what grade level algebra can successfully be taught to typical[3] students in national and international settings. To answer the second question, we should determine when an algebra course *must* be taught in a sequence to prepare graduates for their respective professional pursuits. Let's assume that the answer to the first question for a considerable number of classes both nationally and internationally is 7^{th} grade and the answer to the second question is also exactly the same 7^{th} grade for a typical[3] student, who wishes to pursue a college degree. If, on the other hand, current practices in the overwhelming majority of schools treat algebra as a 9^{th} grade topic, then shouldn't curricular decisions be reconsidered in the light of these empirical data?

Conclusion

It is the scholars and experts who provide the groundwork for appropriate programming – based on scope, sequence, and thinking processes - in all subjects. However, "real world" context and "real world" sequencing would greatly augment the contributions of these people through the use of "real world" data that would help identify meaningful, realistic, and superior levels of expectation and achievement for different age groups in various disciplines. Even in the worst-case scenario that all the arguments made and/or all the examples given in this paper for the existence of low student achievement caused by low academic expectations, our recommendations would still prove useful. The database we are suggesting will either highlight disparities between the current practice and what should be expected from students or provide evidence that would justify current practices. In either case, we will have empirical data to support our educational work with America's children.

When we take for granted that the education system in this country has taken the direction of 'standards-based' assessment and curricular practices, our perspective becomes even more valuable. The worst thing that can happen in a 'standards-based' approach would be the absence of a *healthy* process to determine *meaningful* standards. In fact, a healthy process that would generate meaningful standards and expectations would be the strongest safeguard against indecisiveness around the implementation of the system. We have witnessed states' giving in to pressure in the form of asking easier questions or lowering the passing scores on proficiency tests. If and when standards and expectations are based on empirical data, there would be much less hesitation in the implementation and enforcement of standards-based educational practices. Once the first and most important step of establishing standards and expectations is accomplished, that is, once we know what we should try to accomplish, we can address other educational issues –such as school-parent relationships and teacher training- accordingly.

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Footnotes

[1]We acknowledge that there are numerous intended outcomes of education, such as healthy social and emotional development of students and the acquisition of good work habits and moral values. We recognize the importance of all these outcomes. However, in this paper, we are focusing on academic outcomes. More specifically, we focus on student achievement in such core academic subjects as mathematics, science, and reading.

[2]In accord with our recommendations that are broad, we intended to paint an overall picture showing that persistently low academic expectations are a major reason for low student achievement. Since we did not deal with one specific case of low student achievement caused by low expectations, we did not attempt to address the counterarguments that can be made for each of the many examples we have given in this paper. We realize that there are people who believe that most, or even all, of the examples given in this paper are simply parts of a 'manufactured crisis'. But this does not negate the fact that many people are concerned about the current status of the education system in this country.

[3]We recognize that our paper imagines a "typical" student, admittedly a nebulous term, but illustrative for our purposes. This term is not used to suggest a one-size-fits-all approach. We believe this position deals lightly with the broad spectrum of cognitive needs. Instead, we are presenting a general framework, requiring empirical data, that allows for the establishment of high, meaningful, yet realistic expectations that could guide students toward their aspirations. We realize that this can only be achieved for all students through identification and delineation of various student groups based jointly on cognitive ability, academic aspirations, and consequent expectations. In fact, we believe that the empirical data collected over time will provide a full and detailed academic menu to a broad range of student ability groups that could be available to schools, teachers, students, and parents. Our recommendation calls for a body of empirical evidence that would guide and enable these students toward an appropriate and optimum course-taking schedule.

Even though for the full implementation of our recommendations, data must be collected to delineate different student groups, dealing with "typical" students in the short term, will have an immediate positive impact on academic programming and expectations for a large group of students, since "typical" students constitute a large percentage of the whole student body.