

CHAPTER 2

REVIEW OF LITERATURE

Overview

The literature review explores multiple areas. The first section discusses the national school reform movement. The second section analyzes school reform and organizational change. The third section addresses school reform and the teaching profession. The fourth section focuses on school reform and American high schools. The fifth section analyzes school reform and mathematics today. The final section presents the A+ Plan, Florida's accountability system, the focal point of this dissertation.

National School Reform Movement

Reforming public schools has become one of the most important issues on the nation's political agenda. Americans have come to the realization that the need to improve schools is the difference between a future of opportunity and a future of poverty.

The last half of the 20th century has witnessed the greatest and most concentrated surge in educational reform in the nation's history. In an in-depth analysis of the American educational system during the 20th century, Olson (2000) observes that, since the midst of the Civil Rights movement and pushed by President Lyndon B. Johnson, the U.S. Congress sought to use schools to address pressing social problems of poverty, unemployment, urban decay, crime, violence, and racial discrimination. Many people then, as well as now, have envisioned a self-renewing society in which education, supported by government

plays a major role. The U.S. Department of Education (1984), in The Nation Responds report summarizes the government's assessment of the role of education in America:

Deep public concern about the Nation's future created a tidal wave of school reform that promises to renew American education. Citizens, perplexed about social, civic, and economic difficulties, turned to education as an anchor of hope for the future of their nation and their children (p. 11).

The State's Leadership Role in School Reform

A strong and appropriate leadership role is the key to any successful organizational change within schools. Goodlad (1984) hypothesizes that the public school system can never be reformed successfully, unless the state's educational leadership role is a well-balanced mechanism between authority and responsibility. He believes that the school is the basic unit for improvement; and therefore, those associated with individual schools are the people who can really effect change. He also believes that the state should back away from its current tendency to focus on principals, teachers, and individual schools in its efforts to assure accountability. The state's role rather should consist of holding the district accountable for communicating its goals for education in schools, developing balanced curricula in each school, employing qualified teachers, providing time and resources for local school improvement, and assuring equity in the distribution of these resources.

Two Basic Strategies

The Thomas B. Fordham Foundation (1999) indicates that there are two main reform strategies that can revitalize America's public education and improve its

quality and the achievement of all its students. The first of these two strategies is the fusion of standards, assessment, and accountability. This strategy includes the expectation that every student, school, and district will meet high standards of learning. The district and state officials are to reward success and have the capacity and the obligation to intervene in cases of failure. The second strategy is the merging of pluralism, competition, and choice. This strategy posits that there should be open alternatives in the delivery of education based on the now popular belief that it is wrong to make a child attend a bad school when there are better ones from which to choose.

The accountability, on which the first strategy relies, according to the Thomas B. Fordham Foundation (1999), is not applicable unless specific and rigorous academic standards are written and enforced. This task is done usually by the states. Schools, teachers, and students are judged against these standards via tests aligned with them. Accountability is also present in the second reform strategy based on the fact that private schools receiving government money (vouchers), magnet and charter schools, and any other form of alternative education are held strictly accountable for their educational results. Their “staying in business” depends on their ability to succeed in achieving academic excellence based on the same state standards and tests applicable to regular public schools.

Academic Standards

A standard-based education is a nationwide school reform strategy that links academic standards (clear and articulated ideas of what students should know

and be able to do) to assessment and school accountability. Resnick (2000) posits seven principles that could guide schools systems in the process of creating schools in which high academic standards are the norm. These principles are:

1. Clear Expectations: High levels of learning are expected and what students are expected to learn should be clearly defined. These expectations need to be clear, not only to school personnel, but to parents, to the community, and most of all, to the students themselves.
2. Recognition of Accomplishment: Clear recognition is a hallmark of an effort-based school reform plan. Recognition should be frequent and done in such a way that takes into consideration the students' entering abilities and whether or not the students met the real accomplishment criteria.
3. Fair and Credible Evaluations: The students should consider assessment practices fair. Tests must be aligned to the standards and to the curriculum being studied. They must be graded against absolute standards rather than on a curve, so students can clearly see the results of their learning efforts.
4. Academic Rigor in a Thinking Curriculum: Thinking and problem solving should be taught with a solid foundation of knowledge; the two need to be intimately joined.
5. Accountable Talk: Knowledge should be accurate and relevant to the issue under discussion. Evidence is used in ways appropriate to the

discipline, such as proofs in mathematics or data from investigations in science, while norms of good reasoning are established.

6. Socializing Intelligence: Teachers teach to intelligence, calling on students to use the skills of intelligent thinking and holding them responsible for doing so.
7. Learning as Apprenticeship: Students learn alongside an expert who models the skill and guides them as they create authentic products or performances.

In their article Finn, Petrilli and Vanoureck (1998) assert that most state standards do not meet the criteria for what a quality academic standard should be. Although it appears to the public eye that many of the nation's states are in the same pursuit for excellence, this is far from the truth. They cite recent national research data showing that the standards many of the states are using as a foundation for their entire school reform process are far from fulfilling their purpose. According to the authors there are four reasons why these standards "don't cut the mustard".

First, many state standards are extremely vague, justified on the premise that delineating precisely what is to be learned would amount to cultural oppression. States profess to believe in local control and intentionally defer decisions about educational specifics to individual districts or schools. This deferral contradicts the essential point of standards, which is to convey with precision what students should master and are expected to learn.

Second, many state standards are hostile to knowledge for the reason that they place too much importance on “skills” and very little on “specific knowledge.”

Third, some state’s standards embrace the notion that practically everything taught in classroom should be related to the child’s own life.

And fourth, many states are writing “standards of teaching” rather than standards of learning. Standards are used to prescribe teaching methods and classroom strategies, or as substitutes for lesson plans. The authors strongly support the idea that standards should just be clear on what is to be learned at the various grade levels.

According to educational historian Ravitch (1997), although many states across the nation are striving for excellence by taking steps to reform their public schools, many of them are not really raising their standards. They are actually lowering them by employing tests with “floating norms” and failing to hold schools accountable for student performance.

Ravitch (1997) also believes that, in any state involved in some kind of a serious school reform, there will always be groups in and out of the school systems that will not agree with raising standards, calling such effort right-wing schemes. According to her, opposition will mostly come from rural and inner city districts because these sectors fear that the failure rates in their schools will “stigmatize” their children. It is Ravitch’s belief that a failing mark on the state test will be only a temporary embarrassment, but a poor education will stigmatize young people for life.

Testing

Finding out what knowledge students have acquired has been one of the teachers' preoccupations long before the 20th century. According to Hoff (2000), the "testing era" really began in 1965 when the U.S. Office of Education contracted with sociologist James S. Coleman to study whether American schools offered equal opportunity to White and Black students. It is Hoff's opinion that this researcher's study served as a prototype to put "test scores" at the center stage in conducting educational research. As a direct result of his report, President Lyndon B. Johnson signed the Elementary and Secondary Educational Act, a law that ignited the test-driven definition of success.

According to Hoff (2000), school reform advocates judge that, in the same way that academic excellence can only be accomplished through real school reform, accountability can only be effectively exercised under the umbrella of specific, clear, and high standards, with testing aligned to the standards while holding schools, administrators, teachers, and students accountable to the test results. Today, most of the states in the nation have testing systems and rely on their results to grade their schools and publicly honor or shame them. Test results also help to determine which students will be promoted and which will graduate, and whether or not teachers will receive bonuses.

Schools and teachers are under pressure to show their teaching effectiveness through student performance on standardized tests. According to Hoff's (2000), experts in testing believe that norm-reference test results could provide misleading estimates of school staff effectiveness for the reasons that norm tests

are administered and scored in a predetermined standard manner. Their goal is to compare a student's "relative" knowledge or skills with those possessed by a national sample of students of the same age or grade. In norm tests, there is an enormous amount of knowledge or skills within any subject matter that children in any grade level are likely to know. Because norm test developers are forced to "select" a small number of items representative of only certain parts of the entire content domain, there can be "testing-teaching" mismatches. This happens when the test items assess content areas that national or state's educators consider important differ drastically from what is actually emphasized in textbooks or taught locally.

Hoff (2000) points out that opponents of using test results as a measure of teacher performance believe that educators should not be held accountable for teaching results based exclusively on testing results. The reason is that there are other important factors that contribute to students' scores on any achievement test besides what is taught or should have been taught in school. Factors include the natural ability of the students, and most of all, what the student is learning out of school.

Hoff (2000) further points out another criticism of testing for accountability purposes. These critics argue that massive student testing is challenging "equal opportunities", a cherished American value. They reason that test results inaccurately reflect student abilities, particularly for girls and members of racial and ethnic minorities. In the past, test results have been used to label certain groups as less intelligent and have placed a disproportionate number of minority

students in special education programs. Test results also may have a negative psychological impact on minority groups, reinforcing existing hierarchies of race and class.

Fullan and Stiegelbauer (1991) are critics of state testing. They believe that state testing can alter the curriculum in undesirable ways. Teachers begin to emphasize content, as it will be tested, and teach in a format that will prepare students to deal with the content, as it will be tested. Teachers also teach items that are likely to appear on the test and for the testing period, the rest of the curriculum is “de-emphasized”.

Hoff (2000) is less critical. He believes that tests can play a leading role in accountability decisions, but only as part of an accountability system, not the sole component. In his opinion, because of the great numbers of students who need to be tested and the fact that tests can provide great details, skill by skill, of the strengths and weaknesses of children, test results are the most objective measure and the only reliable indicator of what students are learning.

The Fair Test (1999) launched an investigation, to evaluate how well the state’s assessment practices “live up” to the promise of a school reform that supports high standards. The Fair Test found that tests were largely defining the purpose and processes of schooling, negatively affecting not only the curriculum and instruction, but also the culture of learning, student motivation, and the underlying conceptions of what learning is and how humans learn.

The Fair Test (1999) study noted that despite important state testing system improvements, the fundamental approach of testing programs has not changed. The investigation revealed that testing systems were still relying too much on multiple choice test items. In addition, results were used inappropriately to make high-stakes decisions, often impeding, rather than enhancing genuine education reform. Because information was provided on a too-limited range of student learning in each important subject area, schools were not being held accountable for providing rich, in-depth education and for reporting on such achievements to the public. Schools were still focusing too much on measuring rote learning, instead of supporting and assessing complex and critical thinking skills. The ability to use knowledge in real world situations was not addressed. In some cases, a single test was being used as a mandatory hurdle, instead of making decisions about students based on multiple sources of evidence. Misuse of test results was also affecting curriculum and instruction and presenting obstacles to developing high-quality classrooms practices.

According to the Fair Test (1999) study, large-scale tests cannot be used to monitor school reforms because they cannot be used in ways that state educational leaders want them to be. They cannot be used as a tool for improving the immediate learning processes of students. These large-scale tests are blunting, imprecise, and cannot be used as a diagnostic tool. They are poor tools for shaping or improving curriculum and instruction, which is a goal that most states claim for their tests. They do not provide information about whether

or not students can use the things that they have supposedly learned in their lives and therefore provide limited accountability information.

Accountability

Lashway (1999) points out that because taxpayers who want to keep a lid on school spending wish to hold schools and educators responsible for the outcome of instruction, they have demanded information on program evaluations, budget priorities, performance indicators, teachers competencies, and cost-effective studies to show results and indicate whether funding increases were warranted. Lashway believes that this basis has fueled the majority of the states to make mandatory accountability the keystone of their school reform programs. States all across the nation have implemented new policies aimed at increasing standards of schools accountability. Analyzing the role that accountability plays in school reform programs throughout the nation, Lashway states:

During the past decade, virtually all the states have reengineered their accountability systems, not only setting more rigorous expectations, but also changing the focus from input to results. School leaders now must not only do well, but also demonstrate that they are doing well (p. 1).

Most of the people agree that everyone, including teachers and school administrators, should be held accountable for their work. However, teachers and school administrators believe that those who place total responsibility on them and tie their jobs and salaries to student achievement are ignoring the realities of school environments and culture and the responsibilities of other groups, such as parents, community residents, school board members, taxpayers, and, most of all, the students themselves.

Lashway (1999) points out that holding teachers accountable for student performance is based on the premise that people perform better when they have a clear goal and when their performance has well-defined consequences. Applying this premise, the belief is that the desire to attain rewards or avoid sanctions will keep teachers focused on student improvement. However, it is Lashway's contention that this type of motivation has proven to be effective only in the short run, and that it can even hinder the long-term goals of a real school reform.

Using the insights of the expectancy theory, Mohrman and Lawler (1996) propose that both intrinsic and extrinsic motivation play a role in teacher behavior. They believe that teachers are not likely to pursue goals that they believe are not attainable, no matter how financially or psychologically rewarding they could be. Therefore, when teachers' experiences lead them to believe that certain students are not capable of reaching a particular standard and to form expectations that run counter to the goals of school reform, tangible rewards will not suffice to motivate the desired behavior.

The Southern Regional Educational Board (1998) has worked with state leaders on school accountability for the last 10 years and has identified five policy areas that are crucial parts of a comprehensive school-accountability program. According to its report, these component areas working together can provide a coordinated effort to improve student learning. These components are:

1. Rigorous, clear, and unambiguous content area standards so teachers know where their attention in the transfer of learning process should be focused.
2. Carefully designed student progress assessment systems that can provide concrete evidence of the students' advancement towards the goals.
3. Professional development aligned with the state standards and assessment results, to help schools develop their own capacity to meet the targets.
4. Pressure on individual schools to meet the goals through the publication of the school's test results.
5. Assistance, sanctions, and rewards that renders an official verdict on the school's efforts.

Fuhrman (1999) identifies three additional accountability system components. These components focused on the school rather than the district as the unit for improvement, the use of continuous improvement strategies rather than quick fix strategies, and a more sophisticated measurement that goes beyond passing or failing a test.

In many states, annual statewide tests are serving a gatekeeper role in their school accountability systems. They are administered at various grade levels with promotion or graduation consequences attached to test outcome. These state tests identify the students who need remediation and the schools are mandated to provide such services. Results of these tests are sent to parents as a "school report card" and are even published in local newspapers. The test

results enable the performance of the schools and the districts across a state to be compared. In making comparisons, the public often concludes that high-scoring schools or districts are “better” than the low-scoring ones. Therefore, it is obvious that educators and school administrators take tests results seriously to ensure a good reputation and to ensure their job status.

Although current trends and practices within the area of school accountability may vary across the nation, most cover student accountability, teacher accountability, and administrator accountability. Accountability at the state level, where many mandates are often initiated, is also being taken into consideration. In addition, many local school districts also are including measures of community participation and parental involvement. Ultimately, whatever the type of statewide assessment process, it is typically measuring an accountability area that is linked to student achievement.

State Indicator Systems

In order to make school accountability systems work, Kaagan (1990) reports that some states have developed state level indicator systems. An indicator system is a framework into which arrays of value-laden statistics are placed for a review or analysis intended to produce modification of policy and practice. These values are placed in such a way that relationships among them can be examined. The basic block of the indicator system is statistics, particularly statistics drawn from state tests. These statistics have proven to be useful in describing quantitative aspects of the educational system, in terms of the health and the well being of the public schools. Statistics have the ability to show what

happens over time, what can be said about the performance of a school or district compared to other schools or districts, and how the condition it measures compares with societal needs and expectations.

State Accountability Mechanism

An accountability mechanism in education is defined as a body or group that uses state indicator systems to track the progress of educational policies and to determine to what extent the state school reform plan is improving schools. The challenge facing state policymakers who are demanding a high level of school accountability is to determine what accountability mechanism is best, in what contexts, and for what purpose.

Wohlsletter (1991) studied a range of exemplary approaches to accountability to identify what makes each mechanism work. Emerging from Wohlsletter's analysis is a set of traits that characterize an effective accountability mechanism regardless of the state governance structure for education or political context.

1. Be empowered by state government. Accountability mechanisms that receive a government contract to monitor education reform employ the government as an interested audience for their reports. Having committed resources (money and staff) in advance, the government will want to know the returns on its investments.
2. Have monitoring or oversight as a primary mission: Specially created accountability mechanisms whose main task is oversight spend more time on monitoring than retooled policy-making bodies that have simply added oversight to their other responsibilities. Specially created mechanisms

- attract members who consider the oversight enterprise important, and members can claim credit with their constituencies for such activities when oversight is the primary mission.
3. Be independent from implementers: Accountability mechanisms that remain separate from implementers of the reform do not evaluate their own performance and, thus, at least avoid the perceptions of “conflict of interests”. The image of objectivity and neutrality enhances credibility.
 4. Have strong relationships with other policy actors and other leaders outside government: Accountability mechanisms with members who represent various constituencies help sustain momentum for the reforms by expanding interest beyond only a few groups. Strong connections with state policy-makers also increase the likelihood that the monitoring information will be acted upon since following up on the mechanism’s advice often requires government action.
 5. Communicates findings to multiple constituencies: Accountability mechanisms that actively publicize monitoring results help stimulate and maintain interest in education reform. Publicity also puts pressure on policymakers to act or, at least, pay attention to the reforms.

School Reform and Organizational Change

One of the most important ideas that emerged in the 20th century is that of planned, controlled, and directed social change. The belief is that society, in general, no longer needs to wait for the changes to come and then adapt. Rather society anticipates them, guiding the forces that these changes bring to serve

predetermined goals and social values. This emerging idea was the *raison d'être* for schools being viewed as vehicles to generate “a desirable society”. According to Owens (1998):

Educational organizations are expected not only to be vehicles for social change; they are expected also to preserve and transit traditional values to younger members of society at the same time as they are expected to prepare them to deal with an ever-changing world. Thus, schools and other educational organizations must confront not merely change but, rather, the integration of stability and change (p. 288).

A Nation at Risk, a national report released by the U.S. Department of Education (1983), fueled an awakening to the imperative need for a deep organizational change in the school system. The report called for an effort to change the central core of assumptions and structures of the public schools in the United States.

According to Goodlad (1984), the five most challenging areas which school organizations most urgently need change are (a) reducing the wide gap between educational achievement between children of different social classes and racial background; (b) getting students to experience school as a process to which they are willingly attracted, not a compulsory one, which they find boring and which they are forced to comply; (c) enabling students to acquire knowledge that is relevant to their lives, not just rote learning or memorized abstractions, presented to them in a way that gives them a personal purpose in life, in the present and in the future; (d) creating an interest among students in knowing the connection between past and present human accomplishments in order to enhance their own identities, personal, social, and as citizens; and (e) in the middle of the fast-

changing world in which the students live in, familiarize them with the great number of emerging and present career options and the way schooling relates to these options.

Sarason (1990), an observer of schools and change since 1971, believes that school reform efforts will fail unless the strategies and tactics for change are revised. Half a century of experience with a vast number of efforts to change schools has shown them to be largely ineffective in significantly altering assumptions and structures of school organizations, in other words, the organizational culture. For this reason, school reformers who want to bring about significant change in public schools must first understand and accept the power of an organization's culture to shape the assumptions and beliefs of people in schools.

The most challenging aspect of organizational change is finding the most appropriate tactics and strategies to enable the leadership to plan, manage, and control the desired change. Owens (1998) presents Chin's three-part taxonomy of strategic orientations as one that is useful in planning and managing organizational change. The first of these strategies is the empirical-rational approach, which views the scientific production of new knowledge and its use in daily school and classroom activities as the key to plan change in education. The goal of this strategy is to bridge theory to practice through planned dissemination. The second is the power-coercive approach, which differs from the empirical-rational in the sense that it uses threats or sanctions in order to obtain compliance from adopters. These sanctions can be political, financial, or moral.

These first two strategies of Chin's Taxonomy to initiate organizational change view human relations as secondary to the ability to effect changes directly through the exercise of power. They are essentially classical or bureaucratic and share the assumptions that good ideas are developed outside the organization. In these two strategies, the belief is that the organization itself is a target of external forces of change. Further, organizations that prefer stability are resistant to change and therefore, must be forced to change.

The third of Chin's strategies is the normative re-educative approach, which posits that the norms of the organization's interaction-influence system (attitudes, beliefs, and values, in other words culture) can deliberately be shifted to more productive norms by the collaborative action of the people who populate the organization.

In Halpin's and Croft's (1962) words, this third strategy means switching from a closed to an open climate. They believe that because the people in an organization are the ones who can experience the organizational climate, their perceptions ought to be a valid source of data for any intended organizational change. For this reason, whatever teachers perceive as their experience is the reality to be described in their schools

In another view of effecting organizational change, Owens (1998) identifies the four subsystems of any organization as task, technology, structure, and human, and states that out of these four subsystems, only the last has the capacity to react differently to different conditions and resist any plans for organizational change. As Owens explains:

Although administrators must be deeply concerned with the work to be performed in the school, the structure of the organization, and the technology that is used, none of these has the capability of resisting plans for action. It is only the human subsystem that has that capability (p. 314).

It is for this reason that much of today's literature on organizational change is concerned with peoples' feelings. Owens believes that school staff emotions, such as apathy, anger, frustration, and apprehension, have a great power to inhibit any organizational goal achievement.

After witnessing the failure of promising innovations, Goodlad (1984), an educational researcher associated with organizational change studies since the 1940s, conducted a 5-year research study. This study revealed that regularities in schools sustain certain practices through expectations, approval, and rewards. Contrary to other educational researchers who view the outcomes of pupils as dependant variables and instructional interventions, such as class size and teaching method as independent variables, Goodlad (1975) believed that school culture is the independent variable, and both the behavior of the teacher and pupil outcomes as dependent on that culture. Goodlad's study documented that schools should be regarded as capable of changing, and that, as schools change in their cultural characteristics, so does the people in them. Thus, for any organizational change initiative to be successful, the people who work in that organization must first exhibit an internal need and a desire to change.

Fullan and Stiegelbauer (1991) understood that change in a school organization is a highly personal experience; therefore, each and every school staff member or administrator who will be affected by change must have the

opportunity to work through the experience in a way in which the rewards at least equal the cost. As the authors explain:

The fact that those who advocate and develop changes get more rewards than costs, and those who are expected to implement them experience many more costs than rewards, goes a long way explaining why the more things change, the more they remain the same. If the change works, the individual teacher gets little of the credit; if it doesn't the teacher gets most of the blame (p. 19).

House (1974) believes that the personal costs teachers have to pay for school innovations are high and benefits are unpredictable. In his opinion, there is a tendency to oversell innovations in order to obtain funding and get them adopted by policymakers, teachers, and others. This oversell creates a huge gap between the benefits promised and those received. The difficulty of learning a new skill and behavior and unlearning old ones is vastly underestimated because changes in educational beliefs, teaching styles, and other practices represent profound changes affecting the teacher's professional self-definition of teachers. Evidence suggests that change attempts fail more often than not because the people who manage school changes are not aware of the meaning of change for teachers. Fullan and Stiegelbauer (1991) agree that in order to increase the capacity of teachers to manage change properly, it is important that those who have to deal with them understand the subjective world, the phenomenology of the role incumbents as a necessary precondition for engaging in any change effort with them.

Combs (1998) believes that for effective school organizational change to happen, the school leadership should place its attention on altering the belief system of the people who make the decisions and do the work. They should put

emphasis on processes and not preconceived outcomes. In Combs' opinion, changing people's beliefs requires creating conditions for change rather than imposing reforms. He states: "Changing people's beliefs is seldom accomplished by force or coercion. Neither is it generally achieved by lecturing, exhorting, ordering, legislation, administrative mandate, or techniques of reward and punishment" (p. 39). He added: "No matter how promising a strategy for reform is, if it is not incorporated into teachers' personal belief system, it will be unlikely to affect behavior in the desired directions" (p.39).

Fullan and Stiegelbauer (1991) also believe that the daily professional life of teachers is one that obstructs the capacity to deal with educational change. They list "impediments" that can hinder any school reform effort. Some of these impediments are constant daily disruptions, classroom discipline problems, interpersonal conflicts, outside the classroom school events, making announcements, and dealing with the principal, parents, and central office staff. They explain that a constant feeling of shortage of time and little chance for rational thinking and reflection lead teachers to make pragmatic trial and error teaching decisions

School Reform and The Teaching Profession

Bradley (2000) believes that teachers have always occupied a very special place in American society. And even today, at the beginning of the 21st century, this occupation is considered more than a job; it is the heart of the educational enterprise, and to some, is even a calling. Bradley explains that in spite of this importance, since the days of Margaret Haley, the first woman ever to speak

from the floor of the National Education Association at the beginning of the 19th century, educators have been struggling with issues such as the inadequacy of teachers' salaries, job security, heavy workload, crowded classrooms, gaining the respect and autonomy commanded by other professions, and the tendency to "factorize" education, making teachers automatons by forcing them to carry out mechanically and unquestioningly the ideas and orders of those vested with authority.

According to Grant and Murray (1999), the enormous numbers of people who practice this profession, the custodial aspect of the job, and the perception that there is no real struggle in becoming a teacher have greatly affected the general status of the teaching profession. The fact that the teaching profession has been predominantly a female occupation has also had a negative effect on the status of the profession.

Warren (1989) suggests that while other professions have gained respect and control by claiming specific knowledge, altruistic service, natural ability, and virtuous womanhood have mostly characterized the teaching profession. Warren also believes that the familiarity, visibility, and the public's perception that what teachers know is seemingly all too common has impacted negatively the status of the teaching profession.

The Nation at Risk report, by the U.S. Department of Education (1983), also negatively impacted the teaching profession when it informed the nation that too many teachers were drawn from the bottom quarter of high school and college students and that their preparation programs were loaded with pedagogy

methods courses rather than subject-matter work. The same report also argued that the professional work lives of teachers was unacceptable and that teachers were poorly paid and had little influence over critical professional decisions.

The present movements of student academic standards, accompanied by high-stakes tests that hold educators accountable for the results, threaten to worsen the ineffectual image and reputation that the teaching profession already has. There is a real tension between what teachers judge they should teach and what external forces dictate. Goodlad (1984) reasoned that imposed curricula, testing, and accountability measures can interfere with the development of the teaching career as a true profession.

During this past decade, a broad range of research points to a national teacher crisis, unprecedented in the history of United States. Milken (1999) believes that the present teacher crisis is a matter of quality as much as quantity. The projected nationwide shortage of approximately 870,000 teachers for the next 10 years is increasingly pressing the educational system to compete for the talent it needs. In an effort to accentuate the role of teachers in education, he stated that:

Good teachers are to education what education is to all other professions-the indispensable element, the sunlight and oxygen, the foundation on which everything else is built. Teachers are central to assuring excellence and rigor in the educational experience of every young person in America (p. 3).

In analyzing the present teacher shortage crisis, Milken (1999) points out that having high quality teachers is second only to student safety, as the most important issue facing education. The K-12 educational system is not providing

children with high-caliber teachers every year they are in school. This lack is happening at the same time school reformers all across the nation are emphasizing strengthening the K-12 education as an urgent economic imperative. While earlier eras required physical and financial capital to fuel their agricultural and industrial sectors, this era requires human capital to fuel the “knowledge industries,” especially those propelled by information and communication technology, creating an aggressive competition for strong human resources. With reference to this situation Milken continues: “To meet the demands of the Age of Human Capital, we must restructure the teaching profession to create a new tradition of excellence and reward in the K-12 education” (p. 4).

Image, salaries, and lack of career advancement opportunities are exacerbating the teacher shortage crisis, both in terms of quantity and quality. Only one, out of 10 college-bound high school students, expresses interest in teaching. Students’ reasons for lack of interest in the teaching profession are poor image and lack of respect for teachers.

Low teacher salaries are also a problem. The average starting salaries of teachers are lower than those of any other college graduates. Top salaries for the most effective teachers are lower than virtually any other profession. The only career advancement in the school system is moving to administration, a move which takes the most gifted teachers out of the classroom and is overpopulating administrative ranks.

Other problems that are also presently aggravating the quality teacher crisis include pre-service education that is providing too little effective clinical experience and too much seating time. Prospective teachers, when compared to students considering careers in other fields, tend to score at the bottom of high stake exams. This situation is worsened by several factors: low-expectations in the teaching career, state teacher-licensing programs not requiring a passing score above the 25th percentile, and an increase in out-of-field teaching. The shortage in high quality teacher is particularly troubling because research findings indicate that teacher expertise in a subject drives student achievement.

Movement out of the teaching profession is also worsening both the quantity and quality shortage. According to Milken's (1999) report there is an 18 % attrition rate particularly among young teachers by the second year. The people who leave the profession tend to be those who scored highest on both subject matter and pedagogy exams.

The national teacher crisis is especially grave in the mathematics-teaching field. According to the National Commission on Mathematics and Science Teaching for the 21st Century [NCMST], (2000), more than one in four high school mathematics teachers lack even a minor in their teaching field; more than 12% of all new hires enter the classroom without any formal training; and 27% of high school students taking mathematics are taught by out-of-field teachers. These percentages are even greater in high-poverty areas. Among schools with the highest minority enrollments, students have less than a 50% chance of getting a mathematics teacher who holds both a license and a degree in the field.

In order to increase the national pool of mathematics teachers, the NCMST (2000) suggests two fundamental tasks must be accomplished: (a) identify exemplary models of teacher preparation that can be widely replicated, and (b) find ways to attract large numbers of qualified candidates into teaching.

Ways must also be found to reduce the mathematic teacher turnover rates. The turnover in the nation's teaching force has higher rates in the field of mathematics. According to the NCMST (2000), the basic reason why mathematics teachers are leaving the profession is dissatisfaction. The sources for this lack of satisfaction were low-esteem, lack of positive regard for teachers, lack of leadership and respect from principals, lack of classroom autonomy, lack of respect from students, poor support from administrators, overly large classes, poorly equipped classrooms, and poor salaries. This report recommends improving the mathematics teaching-working environment to make this profession more attractive. The report also points out the teacher image problem.

Our society frequently refuses to recognize the professional status of teachers, ranking them below doctors, lawyers, and clergy. Many Americans think "anyone can be a teacher" and that little expertise is required. And because teachers are not fully appreciated for the special knowledge and skills required to do their jobs, they are vulnerable to public attack. This widespread attitude is simply wrongheaded (p. 32).

A lack of diversity of the teaching force is another cause of concern in the present national teacher shortage crisis. Despite efforts by some school districts to hire minority teachers, most have faculties that are predominantly White. According to the National Education Association [NEA] (2001), nationwide, there is a 40% minority student body compared to only 5% minority teachers. The

declining number of Black and Hispanic students majoring in education is deeper than the overall decline in education majors, and minority teachers are leaving the profession at higher rates than White teachers. There is concern that this shortage of minority educators and role models could contribute to a worsening urban plight. In NEA's opinion: " Indeed, such crisis could lead to a failure of all American student to learn the academic, personal, and social skills they need in the multicultural workplace of the future" (p. 1).

According to King, Warren, and Peart (1988), it would be wrong to conclude that the majority of teachers dislike being teachers. For most, it is a "never ending" mixture of satisfying and stressful experiences. In a research study on a population of almost 6,000 high school teachers in Ontario, Canada, the authors developed a list of the most satisfying and the most stressful aspects of being a teacher. The most satisfying aspects were: working with young people, rapport/relationship; student success, achievement; helping students individually with personal academic problems; involvement with extracurricular activities, coaching, drama; and influencing the growth, character and attitudes of the students. The most stressful were: time demands, too much marking, lesson preparation, "administrivia" deadlines; discipline/attendance problems, student confrontations; student lack of motivation, apathy, negative attitudes; lack of administrative support, poor administration; negative attitudes of colleagues, incompetent and poor teachers; working conditions, lack of equipment, texts, low budget; lack of security, redundancy, declining enrollments; large class size;

ministry directive, changing curriculum or course content; and the lack of public and parental support and negative attitudes towards education.

School Reform and American High Schools

High schools, in particular, have gone through a remarkable transformation in America. As Keller (2000) explains, a web of economic and social factors, such as booms in immigration all across the nation; the abandonment by Americans of their farms into increasingly crowded and industrialized cities; new technologies replacing jobs once held by children; laws restricting or banning child labor; and compulsory attendance laws, transformed these institutions from a rarity in the 1800s, an urban and middle-class phenomenon with selective admissions based on entrance exams and modest enrollments, to the high schools in existence today.

Keller (2000) points out that with the transformation from an institution with selective admissions to today's high schools, came the question of what kind of education would better suit America's increasingly larger and more diverse high school student population. This question has perplexed educators, fueling a never-ending curriculum debate. Curricular relevance and appropriateness is at the center stage of every school reform movement all across the nation and the quality of college preparation that young Americans are receiving at this level has become a national major concern.

Keller (2000) also believes that the inequalities in educational opportunities faced by high school students, based on their race, class, ethnicity, or place

where they live, has been a concern at the cutting edge of the American public attention since the mid-20th century. The civil rights movement in the 1950s and the federal “war on poverty” under the leadership of President L. B. Johnson in the 1960s, combined with aggressive interventions by the federal courts, caused Americans to confront the reality of such internal disparities. As a result, many special programs to meet the needs of minorities, the poor, the migrant, and disabled children were created, often at the expense of a strong core curriculum and an emphasis on high achievement.

In the 1980s, when a flurry of national reports decried the state of the American schools, the states rushed to raise the standards for high school education by mandating new tests, lengthening the school year, raising salaries and entrance requirements for beginning teachers, and tightening their graduation requirements. As a result of these efforts, the number and quality of academic courses taken by high school students have risen. However, the achievement gap between high school students in poverty and minorities and their counterparts is still stunning. Eliminating this educational gap is one of the greatest challenges that educational leaders, educators, and, most of all, politicians, are now facing

Jones (2000) believes that the educational system in the United States continues systematically to under educate poor and minority children. She declares that: “Across the country, students are being prepared for mastery of servitude in a highly technological, global community of the 21st Century, and the majority of African American and Latino students are on the servitude track”

(p. 3). Jones contends that the mathematical achievement gap has been institutionalized in schools and districts by setting high versus low expectations and standards in course offerings in the different tracks as well as in different allocations of resources, including well-prepared teachers. She strongly believes that the tracking system and policies are making assumptions and judgments about student abilities, time and again, based on socioeconomic, racial, ethnic, or gender status. As a result, poor and minority children are underrepresented in college preparatory classes such as algebra, geometry, and advanced placement courses, and are over represented in classes such as consumer and business mathematics and special education.

High schools across the nation, especially at urban cities, are faced with the challenge of educating large number of Limited English Proficient students (LEP). According to Schwartz (1991), in spite of the that using mathematics is crucial to an individual's ability to function in the American society, students lacking proficiency in English often have been denied access to an adequate mathematics education. She states that many educators believe that is necessary to significantly improve their English language skills before attempting to teach them more than basic computational skills. Schwartz states that students are capable of learning advanced mathematics whether or not they are fluent in English and whether or not their teacher can speak their native language. She said:

In general, students (LEP) should be exposed to more content than has been done traditionally. The practice of going over the same content repeatedly year after year, instead of moving on to cover more challenging

content that incorporates what has been covered before limits students' opportunities to learn.

According to Secada and Carey (1993), recent research suggest that some of the techniques developed by the reform movement in mathematics are effective with LEP students and that mathematics instruction can help students' fluency in English, when it is used in concert with other bilingual instructional methodologies. And more important, it gives LEP students the opportunity to develop their ability to communicate their answers and the reasons in English. It is Secada's belief that advanced mathematics courses should be made available to LEP students, either as part of a bilingual program or in all-English classes and that mathematics teachers should encourage these students to take advanced courses, and should expect them to master the material.

It is Fradd, Wilen and Fardig (1998) belief that if the learning requirements of LEPs are not fully included in reforms, or if their needs are treated as less important and compelling than those of English-proficient students, the impact of reform will be diminished. In reference to the challenges that high schools with large number of LEPs students have to face, he points out:

A challenge lies in recognizing the efforts being made to implement effective programs and support them, while changing the attitudes and practices that prevent students' access to effective instruction. Unless there is a strong commitment to equity and achievement, programs may comply with the letter, but not the spirit of reform (p. 12).

The world of the high school student has also changed. Hersch (1998) points out the changing context of teenage behavior, saying that ten years ago, the world of a teenager was a place to stop in-between, a place to stay before becoming an adult. Issues like drugs, divorce, and vandalism were considered

unusual to them. Today, however, “good kids” engage in many of the same risky behaviors as “bad kids,” such as sexual intercourse, lying to parents, cheating on tests and illegal drinking, and sometimes, even before high school years.

Hampel (1986) points out that there are other factors impacting teens that may be more cause for concern than the trend lines for teenage drinking, suicide, dropping out of school, teenage pregnancy, all of which have dropped or leveled out. Of increasing concern is a prevalence of part-time jobs, peer pressure to do no better than moderately well in school, and the hours spent watching television.

Goodlad (1984) also looked at factors affecting teenagers’ attitudes towards education. He contends that middle class high school students’ attitudes towards education have also been affected by parent salary increments and the abundance of jobs in their socioeconomic class causing teenagers to feel secure with or without college. The buying power that young people have today has caused them to ignore the long-term goals of getting an education.

Goodlad (1984) found other reasons for the lack of performance, including the weakening conditions of the two traditionally stable institutions that have done most of the educating for centuries, the household and the church. The supportive relationship between home and the school has also deteriorated substantially. The economics of providing for such essentials as food, clothing, and shelter joined other factors in changing the nature of the community and the community support for education.

School Reform and Mathematics Today

Mathematics began with counting number representations as far back as 2000 B.C., when a 60-place value number system served as a foundation to a powerful mathematical development. O'Connor and Robertson (1999) believe that in American mathematics classrooms, math is taught in a way that makes it difficult for students to understand the evolution of this science. The authors state that:

It is quite hard to understand the brilliance of major mathematical discoveries. On one hand they often appear as isolated flashes of brilliance, although in fact, they are the culmination of work of many, often less able, mathematicians over a long period of time (p. 3).

Sometimes the fact that people live in a mathematical world is overlooked. In the United States, mastering mathematics has become more important than ever, and those who understand and are competent in mathematics will have opportunities that others do not, because mathematical competence opens doors to productive futures. Although students have different needs, interests, and abilities, every one needs to be able to use mathematics in his or her personal life, in the workplace, and in further study. All students need to learn a set of mathematics basics that enables them to compute fluently and to solve problems in a creative and resourceful manner.

The National Council of Teachers of Mathematics [NCTM] (2000) reported that there are six principles that should guide school counselors, teachers, and administrators as they advise students into a mathematics track or course selection.

1. The Equity Principle. There must be high expectations and strong support for all students. All students need access to a coherent, challenging

- mathematics curriculum that is taught by competent and well-supported mathematics teachers, regardless of their personal characteristics, backgrounds, or physical challenges.
2. The Curriculum Principle. A curriculum should be more than a collection of activities. It should be coherent, cumulative, articulated, and focused only on important mathematics.
 3. The Teaching Principle. Teachers must know and deeply understand the mathematics they are teaching. The three actions that have always characterized good teachers are the suitable selection and use of curricular materials, the appropriate use of instructional tools and techniques to support learning, and the continuous pursue of self-improvement.
 4. The Learning Principle. Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.
 5. The Assessment Principle. Assessment should support learning of important mathematics and furnish useful information to both teachers and students. It should be more than a test at the end of instruction. Assessment should be an integral part of instruction that guides the teacher and enhances learning.
 6. The Technology Principle. Technology is essential in teaching and learning. Technology influences what the mathematics teachers teach and enhances students' learning.

Defending academic high standards in the school of mathematics, Price (1996) writes: "The standards seek to change how students are taught mathematics so that they will, in turn, be provided a strong mathematical foundation that will enable them to meet the challenges of their future" (p. 2). This can only happen, however, if students can solve mathematical problems that go beyond arithmetic and simplifying algebraic equations; if classrooms become a place in which students are actively involved; and if assessment is used to promote student learning and assist teachers in making instructional decisions. The strength of the standards, according to Price, lies in the certainty that they call for a continuation of the basics, popularly known as addition, subtraction, multiplication, and division, and introduce the business and industry basics, which include reasoning, problem solving, communicating, mathematical connections, and collaborating. Price clarifies that this does not mean that the content and teaching practices of past decades were wrong because schools then were not expected to graduate so diverse and large number of students.

We have learned a great deal during the past twenty years about how children learn and individual learning styles differ. We need to use the result of that research. To use only one method to try to reach all students at whatever levels is negligent as best and criminal in the extreme (p. 4).

Price (1996) contends that the problem mathematics schools are facing is no longer the standards' efficacy. The issue now is, whether the standards are working for every child and providing an equal opportunity for all students to learn mathematics. Equal does not mean treating everybody equally, but creating equitable situations. Price concluded his report stressing that school

mathematics reform is based on the beliefs that every child can learn mathematics, that every teacher must have adequate support and professional-development opportunities, and that every parent has a vested interest in setting and achieving higher standards for mathematics education.

There appears to be a linkage between mathematics and higher education attainment. America's New Deficit, a report issued by the U.S. Department of Commerce (1997) found that students who took rigorous mathematics and science courses were much more likely to go to college than those who did not. According to this report, 83% of the students who took algebra and geometry went to college within 2 years after graduation, compared to 36% of the students who did not take these courses and did attend college. This report also found that algebra has become the "gateway" to advanced mathematics and science courses in high school; however, only 25% of 8th graders in the United States enroll in this course. Another finding was that taking rigorous mathematics courses in high school appears to be especially important for low-income students. Low-income students who took algebra and geometry were almost three times more likely to attend college than those who did not. Nevertheless, these are the students who are less likely to enroll. It was also highlighted in this report that mathematics achievement depends on the courses students take, not the type of school the student attends. Students in private and public schools who took the same rigorous mathematics courses were equally likely to score at the highest levels on the National Assessment Longitudinal Study (NALS) 12th grade mathematics.

The Third International Mathematics and Science Study [TIMSS] (1995) reported that U.S. students, in comparison to their peers in other nations, performed well in mathematics at the fourth-grade level and performed near the international average at the eighth-grade level. However, at the high school level, the situation changes drastically as twelfth graders scored among the lowest of the TIMSS nations in mathematics as well as in physics and advanced mathematics.

There is also a linkage between mathematics and career opportunities. America's New Deficit report, by the U.S. Department of Commerce (1997), declared that as computer and data processing become more important to the economy, more and more workers skilled in mathematics and in science related disciplines, will be needed to maintain the international competitiveness in the United States. According to this report, 50% of company executives in information technology report a lack of skilled workers as the most significant barrier to their companies' growth.

The National Action Council for Minorities in Engineering [NACME] (2000), launched a national advertising campaign to create awareness among parents and students about the importance of taking advanced mathematics courses in high school. The council believes that algebra, geometry, trigonometry, pre-calculus courses, or the equivalent integrated curricula are crucial gatekeepers for access to a broad range of careers, which include engineering, the natural sciences, accounting, investment banking and many others. The council reported that students, who opt out of academic mathematics as early as eighth grade,

essentially forego any future opportunities to pursue a career in such fields. According to the NACME, only 12 % of all American students and 6 % of minority students graduate from high school with the 4-year sequence of mathematics and science courses to be eligible for science or math-based majors in college. More than 50 % of eighth graders say they plan to drop mathematics and science courses as soon as schools make that choice available to them.

The NACME (2000) has two national campaign goals. The first is that all American students demand advanced levels of mathematics and science courses that will allow them to enroll in high paying careers. The second is that all school systems mandate all students to complete high levels of math courses as requirements for high school graduation.

Florida's School Accountability System: The A+ Plan

Prior to 1998, Florida's school improvement and accountability system was mainly in the form of school recognition with financial awards for high performance and assistance as well as intervention for low performing schools. Three important school reform elements were already in place before the Bush/Brogan administration. The Sunshine State Standards (SSS), which outline what students should know and be able to do from kindergarten through high school. The Florida Comprehensive Assessment Test is a criterion-referenced test designed to measure mastery of the SSS. The third is the Grading System Performance Levels, the five achievement levels for FCAT score results by which schools are graded using a multi-step process.

The election of Governor Jeb Bush in 1998 resulted in the proposal of the A+ Plan. Governor Bush's (Florida Department of Education [FDOE], 1999) first words in his Inaugural Address on January 5, 1999 were: "Transforming Florida's public schools into centers of excellence is the most important mission of the Bush/Brogan administration" (p. 1). In this address, he stated that many of the state's schools were under performing and that many of Florida's children were not getting the education they needed. He proposed the A+ Plan to strengthen Florida's public education system.

In this context, Governor Bush and Lieutenant Governor Brogan won legislative approval of the Bush/Brogan A+ Plan for education. This school reform plan is based on the principle that a student should gain at least a year's worth of knowledge in a year's length of time. The fundamental premise at the core of this program is that every child can learn, and no child should be left behind. The A+ Plan (FDOE, 1999) focuses on providing accountability and improving student learning, raising standards and improving training for educators, and improving school safety and reducing truancy. All these changes are designed to improve student learning. The accountability and improving student learning is achieved by revising state educational goals, measuring annual student learning, closing the education gap, grading schools and reporting their progress, eliminating social promotion, rewarding schools for achievement and improvement, providing help to failing schools, and giving parents more choices over their children's education.

Because there has been little accountability in the state of Florida for teacher preparation programs, this plan is committed to higher professional standards for educators. This will be achieved by raising standards, rating colleges of education on performance, raising standards for admission to colleges of education, rewarding high-performing educators, and focusing and improving teacher training.

Because a school with a safe environment offers children the best opportunity to learn, this plan is committed to safer schools by investing more money in school safety, expanding second chance schools for disruptive and violent youth, and preparing teachers to handle classroom discipline.

Some of the steps to accomplish the Plan's goals are increased funding; grade all schools on an A to F scale, expand the FCAT to all students from third through tenth grade, reward successful and improving schools, provide unprecedented support to improve failing schools, eliminate social promotion, dramatically increase funding for remediation efforts and school safety programs, raise teacher standards, increase parental choices and encourage innovation by providing Opportunities Scholarships to children in chronically failing schools, and provide financial rewards for superior teachers.

The Florida Comprehensive Assessment Test

The FCAT Owners' Manual (1999) explains that this test was designed to measure reading and mathematics content defined by the Sunshine State Standards (SSS). The test questions measure the SSS benchmarks that identify what students are expected to know and be able to do in reading and

mathematics. The FCAT was field tested in 1997. In 1998 the State Board of Education approved the five achievement levels that form the basis for reporting student results and declared that the first year results constituted the baseline against which future progress could be measured.

The FCAT is the only test Florida students take that is directly linked to the state standards. It requires students to analyze, synthesize, and evaluate the information presented and to apply strategies and procedures they have learned. The level of thinking required in this test goes beyond the recall of facts and basic comprehension typical of many standardized test questions.

The mathematics and reading tests results are reported on similar total score scales. The lowest possible score is 100 and the highest possible is 500. Beginning with the 1999 FCAT administration, the percentage of students who achieved at each level on the scale was reported for schools, school districts, and the state so that the growth in student achievement can be measured by comparing the proportion of students in each achievement category from year to year. In addition to achievement levels and total scores, sub scores are reported for each reading and mathematics test. These sub scores indicate a student's level of achievement on the five mathematics strands and two reading reporting categories. Sub scores are percentage scores that range from 0% to 100% and are an estimate of the percentage of content measured by the test that the student has achieved.

The state of Florida has 67 counties and 34,004 schools that educated 2.4 million Pre-K-12 students. Forty-five percent of the state's student populations

are minorities, almost 30% live in poverty, and almost 15% have disabilities (Quality Counts 2001: Florida Policy Update, 2001). With the passing of the A+ Plan the number of school graded “F” went down from 78 in 1999 to only 4 in 2000; and the number of schools graded “D” went down from 613 in 1999 to 397 in 2000. Schools graded “A” went up from 203 in 1999 to 579 in 2000 (FASA Meeting, 2000). It was also reported that schools that are most often graded “D” and “F” tend to have large numbers of minorities, Limited English Proficiency students, and students in poverty.

Summary

Americans have come to the realization that the need to improve schools is the difference between a future of opportunity and a future of poverty. Reforming public schools has become one of the most important issues on the nation’s political agenda.

Experts in organizational change believe that school reform can only happen when the leadership concentrates on changing people’s beliefs. School reform efforts should be directed toward altering the belief system of the people who make the decisions and do the work; in education they are the teachers and school administrators. Studies have documented that legislation, administrative mandates, or techniques of reward and punishment seldom accomplish changing people’s beliefs. Experts believe that this type of pressure exerted over teachers, especially at the high school level, ignores an array of conditions surrounding the conduct of schooling that is far more intense and widespread than recognized.

The current national teacher shortage crisis complicates school reform efforts across the nation. The present movement to increase students' academic standards, accompanied by high-stakes tests that hold educators accountable for the results is negatively impacting the reputation of teachers, conveying an image of ineffectual teaching, and threatening to worsen the present teacher shortage crisis, especially in the field of mathematics. There is an urgent need not only to attract but also to retain and motivate the best talent to the teaching profession. There is also a need to raise both the standards of the teaching profession and the incentives to enter the profession, pay, status, and working conditions.

High schools, in particular, have gone through an astonishing transformation. The world of a teenager used to be a place to stay before becoming an adult. Today, however, educators who teach at this level are challenged by a school culture that works against academic achievement. Heavy emphasis is being placed on feelings, subjectivity, and self-esteem at the expense of learning and thinking. American high school students perform low as compared to the rest of the industrialized world. Violence, vandalism, sexual misconduct, illegal drinking, and drug abuse are prevalent at many high schools. Other issues of concern include lying to parents, cheating on tests, part-time jobs, peer pressure to do no better than moderately well in school, and the many hours spent watching television.

As technology becomes ever-present in the workplace, the need to have a strong mathematical background is increasingly important. In the job market,

workers who have a strong mathematics background are more likely to be employed and generally earn more than workers with lower mathematics achievement, even if they have not gone to college.

Although mathematics reform initiatives are based on the belief that every child can learn mathematics, there is a stubborn gap in mathematics academic performance between students in poverty and minorities and their counterparts. School reformers believe that these inequalities are presently based on students' race, class, and ethnicity, or place where they live. Eliminating this educational gap has become one of the greatest challenges faced by school reformers.

In Florida, the current school reform strategies are the fusion of standards, assessment, and school accountability. The accountability component has mostly relied on determining specific and rigorous academic standards with schools, teachers, and students judged against these standards via state tests aligned with them. As a result, schools and teachers have been under pressure to show their teaching effectiveness through student performance on standardized state tests.

Since 1998, transforming Florida's public schools into centers of excellence is the most important mission of Governor Bush's administration. The A+ Plan is focused on increasing student achievement. It is based on the belief that every child can learn and that no child should be left behind. Its most important principle is that teachers and administrators should be held accountable for their students' performance on the Florida Comprehensive Assessment Test (FCAT).

Although Florida's general public agrees that teachers and school administrators should be held accountable for their students work, many teachers and administrators do not agree that an accountability plan should place total responsibility on teachers, tying their jobs and salaries to student achievement, while ignoring the realities of school environments and culture and the responsibilities of other groups such as parents, community residents, school board members, taxpayers, and most of all, the students themselves.