

Apply Deming's Methods to K–12 Curriculum and Improve Student Achievement

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Abstract

The United States has been engaged in school reform for three decades. The federal government as well as all fifty states have passed numerous versions of reform legislation to mandate and regulate the process. Educators have adjusted their practices to the policy created by this legislation. They have also allocated hundreds of billions of dollars to implement the mandated reforms. The effort has also involved literally tens of thousands of educators and millions of students.

There have been countless assessments of the results of reform legislation. None deny that student achievement nationally is about where it was when reform started thirty years ago. What has not been done throughout the three decades is any assessment of the policies that have driven the reform movement. This article proposes use of the systems theory of W. Edwards Deming to assess the educational system and offer a new set of policies that can bring about dramatically improved student achievement.

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The problem is at the policy level and its correction must start there. Present policy is defeating its own purpose of improving schools

After almost three full decades of school reform nationally student achievement is about where it was when we started and student behavior has declined dramatically. Numbers of drop outs, especially in our cities and among the poor and minorities are much higher. This despite the fact that reform efforts have involved many billions of dollars, countless professionals, honest and extensive amounts of work, endless state and federal legislation, regulation and mandates, and no end to good intentions. After thirty years of failure, its time for something different.

W. Edwards Deming has pointed out that persistent problems in organizations are due not to the workers but the system; the structure of the work, systemic practices, policies, methods and conventional thinking. Toyota is one outstanding example of how his methods can take an inferior company to excellence and dominance.

When I was a young teacher I lived in New Jersey and worked in the Bronx. Each morning I would drive to the George Washington Bridge and cross the Hudson River to the Bronx. If all went well (no breakdowns, accidents, bad weather), my usual delay was about ½ hour. In the evening I reversed the process again hoping all went well.

While I sat in my car wasting gas and polluting the air, I frequently cursed the toll takers (blamed the workers). In retrospect I now understand that they could not have improved traffic flow more than ever so slightly even if every toll taker operated at 100% efficiency all of the time.

What caused the dramatic improvement we now see in the river crossings (and now being extended to toll roads all over the country)? Reconsidering the structure of the system and changing it not only helped but transformed the results. This is essentially the same process that transformed Toyota from a third rate product to world class.

The structure of work at the bridge was essentially the same for over 50 years. Then one day someone reconsidered the whole toll taking system/structure and made a startling observation. If tolls were eliminated on one side of the bridge and doubled going the other way

the same amount of revenue would be collected and delays would be cut by more than 50 % since extra toll takers were transferred to places on the collection side. The consequences of this creative systems thinking are many, all positive and in effect to this day:

1. Delays were significantly reduced.
2. The same amount of revenue was collected.
3. Toll taker productivity was dramatically increased.
4. This was accomplished with the same or even less resources.
5. We could also generalize and do the same thing for all of the bridges and tunnels up and down the river.
6. We could even do the same things to collect tolls and improve all of the above in other parts of New York State and all across the United States.
7. Reduction in driver stress and related medical and emotional problems, health care costs, etc.
8. A great reduction in air pollution.
9. A great reduction in use of gasoline.
10. Many more peaceful and enjoyable dinners at home.
11. Reduction in family stress, conflict and prevention of some divorces.
12. Happier drivers.
13. Happier toll takers.

This change was actually continuous systemic improvement # 2. (The first improvement was the advent of exact change lanes. This change resulted in collection of the same amount of revenue while requiring fewer resources.)

Having made such a simple brilliant systemic improvement, the leaders at the bridges and tunnels did not stop. They continued to try to improve the system? In fact they committed to continuous self improvement of the system? How did they know what to improve? They committed to continuous self assessment of the system to find out. All involved in the system are welcome and encouraged to suggest ways to improve it. The sources of such suggestions are not limited to the bureaucratic hierarchy.

Adhering to Deming's principle of continuous improvement, subsequent changes have been made:

Continuous systemic improvement # 3 was Easy Pass. Again productivity was further significantly increased while decreasing resources.

Indications are this commitment is permanent. Why stop?" Continuous systemic improvement # 4 was Express Easy Pass. Even greater productivity was achieved with even less resources.

What next? We wait in hopeful anticipation.

Is there a message here for school reform?

Compared to the bridges and tunnels in terms of systemic change the schools are at the stage before exact change toll lanes were instituted to increase production. While the bridges and tunnel process was unchanged for 50 years, the structure of K – 16 education is basically unchanged from its origin well over 100 years ago. It is producing what it was designed to produce. If everyone in the system performs to the maximum there can be no more than marginal improvement.

We can learn a great deal from what they did not do:

1. Raising taxes annually to improve the productivity of the toll takers would not have improved traffic flow (productivity).
2. A merit pay plan for toll takers would not have helped.
3. Giving all toll takers more money (even if you paid each toll taker a million dollars) would not have helped.
4. Years of state and federal toll taking legislation, regulations and mandates would not have helped.
5. Increasing toll taker accountability would not have helped
6. Increasing certification requirements for toll takers would not have helped
7. Taking away toll taker tenure and firing toll takers would not have helped.
8. Removing tenure and firing toll taker supervisors would not have helped
9. Toll taker reform programs to improve the toll takers' performance in the existing structure would not have helped.
10. New assessments (even authentic assessments) of toll taker performance and productivity would not have helped.
11. Raising standards for toll takers would not have helped.
12. Reporting poor toll taker performance in the newspapers would not have helped.

The problem is at the policy level

School improvement is not happening because the policies driving the present system prevent it. Ironically both state and national reform efforts intended to improve the schools reflect the 12 futile practices listed above and add to the inertia of the system to frustrate and block improvement. The very measures now employed to reform education have not only failed consistently but will continue to fail as long as they are employed.

What can we do? The knowledge needed to improve the schools already exists.

1. Leadership must recognize the indisputable fact and accept the failure of current school reform policy in terms of causing increased student achievement, no matter how well intended.
2. Leadership, starting with the United States Department of Education and fifty State Departments of Education, must recognize, practice and advocate the systems ideas of W. Edwards Deming including his 14 Points to start.
3. Leadership must advocate and model continuous self assessment and self improvement of all professional educators, starting with leadership. Excellence is a choice. It can not be mandated. The only person in the world who can make me excellent is me.
4. Leadership must advocate and model continuous collective self assessment of all educational organizations including departments of education, school boards, and schools.
5. Leadership must advocate and model commitment to continuous self improvement of all educational organizations including departments of education, school boards, and schools.

In addition to improving student achievement, public education in America faces a funding crisis. For almost two full decades the rate of increase in school budgets has consistently exceeded the rate of increase in income levels of our citizenry. These two lines of

contingency are near crossing. In some areas they already have crossed. We must learn to increase achievement while reducing and even cutting costs or risk forcing our citizens to seek cheaper alternatives. Systems thinking can enable us to do this.

The problem is not lack of concern or good intentions. The problem is at the policy level and its correction must start there. All students are capable of learning far more than they presently do. Constructive policies that empower teachers to teach and students to learn and restructure the system to remove obstacles to improvement must be enacted and implemented. Present policy that is defeating its own purpose of improving schools while constantly driving up costs must be abandoned and those failed policies must be replaced with the proven systems ideas of Deming. When they are applied to education we will experience a learning renaissance and decrease per student costs at the same time.

After decades of national and state efforts to reform k - 12 education, including massive expenditure of resources, involvement of countless professionals, tremendous amounts of work, national and state reform legislation, etc., etc., etc., student achievement is about where it was when we started and there is general agreement among educators and others that student discipline has declined dramatically. We can raise achievement only when we identify the structural problems depressing it. Using Dr. Deming's approach these structural problems can be identified easily. This paper presents only one example of many such structural problems found in Dr. Kelly's manuscript for a new book: Bridges and Tunnels and School reform, currently in process.

William Glasser asks a great question which I have repeated to literally thousands of educators. What percent schools of students in American public schools do you estimate are consistently achieving at a high level? Glasser estimates 10 to 15%. Virtually all of the educators tend to agree. Most think it is less. It is not uncommon for high school teachers and administrators to say less than ten percent. Clearly the present system serves only a very small fraction of our students well.

W. Edwards Deming tells us to look to the structure of the system for solutions to ongoing problems. If we look at the structure of curriculum vs. the needs of the students we can identify the primary problem and develop the needed alternative structure.

Ironically we pay endless lip service to diversity yet fail to deal effectively with it where it really counts, individual student differences. Cultural diversity may or may not have importance in other areas. In terms of learning in schools it is educationally irrelevant. While extensive efforts are going on to deal with educationally irrelevant group diversity, the system is ignoring the diversity that is absolutely critical to learning. Any group, whether racial, gender, age or other category that includes millions has as much diversity within it as any other such group. It is not the between group differences that we need to address (also known as stereotypes), but individual student differences that are critical to all students.

All of the present educational focus on group differences misses the point completely. From a learning perspective it matters not what group a student belongs to. It is their individual uniqueness that must be recognized and addressed. No two human beings are alike. Developing instructional programs to deal with racial, gender, ethnic, etc. differences misses the point. It serves to set up still another dysfunctional structure for learning. Ironically, it succeeds in serving to reinforce stereo types that should have been discarded long ago.

Presently the entire educational system is structured almost completely by grade levels. Student placement is by grade level. Curriculum, materials, tests and assessments, expectations

– virtually everything is set up/structured by grade levels. Students are required to work at the level of their grade. This structure serves none well.

Language The First Essential Curriculum

Language is the common denominator for all other learning

Close to 100% of students who are failing are language deficient.

They do not possess a level of language sufficient to understand the instruction they are receiving. Their reading scores are below their grade levels. This single factor is the primary cause of most academic failure. While this is generally recognized, the standard curriculum includes a variety of subjects: language arts, social studies, science, mathematics, physical education, music, art, etc. The first four are usually considered the "core curriculum" and given generally equal weight and importance. This must be reconsidered.

When we look at school curricula, they are generally viewed as ends, "what" is to be learned. Language, however, is not only an outcome or end, but also a means.

Language Arts, Social St., Science. Math, PE, Music, Art, Etc. (ENDS)

Language Arts (MEANS)

Language is the means to learn all other curriculum. It is the common denominator for all cognitive learning, thinking and communication. Therefore, language arts is the most important curriculum. My "ability" to learn in school will be no greater than my present level of language achievement. If you want to increase my "ability" to learn, teach me more language. As my language achievement rises, my "ability" to learn increases. All learning, thinking, and communication are a function of language and are facilitated and/or limited by my present level of language achievement.

The truth of the above is as self-evident as it is monumental in its implications for restructuring. If students have low language achievement, it makes no sense to give them one period of language arts and 6 or 7 periods of other subjects for which they do not yet have the necessary language to be able to learn. This structure has failure built in. It is also probably the single greatest cause of discipline problems, attendance problems and dropouts. Would you stay in a school when 80 percent or more of what was being taught was in language you did not understand? This is a genuine form of unintended child abuse.

When I was a new junior high school teacher in the South Bronx, I remember going to the chairman of my social studies department and telling him that four of my five 8th grade classes didn't understand the textbook, curriculum materials, etc. Their language skills tested from second to fourth-grade. His response was, "that's the required curriculum and that's what you teach." So, for a full year, I taught the required curriculum and for a full year the students did not learn. This is a classic case of confusion of 1) ends and means, and 2) priorities.

Curriculum and instruction are means. They have too often become their own ends. Learning is the end. In and of themselves, curriculum and instruction have no value. Unless they result in learning (the end, product), they are worse than useless. They become the means to failure, discouragement, poor self-image, dropping out, drug and alcohol abuse, family problems, crime, etc. From an economic point of view, failure and/or low achievement cause low productivity.

My junior high school story is also a clear case of inappropriate priorities. The needs of the curriculum, the system and the state syllabus were placed ahead of the needs of the child. Schools exist to meet the needs of children. Children do not exist to meet the school's need. Nor do children exist to meet the needs of business or of the state (i.e. Fascism). Indeed the state

exists to meet the needs of the child. Ironically, what meets the needs of our students will best meet the needs of business and the state.

Therefore, our first concern in the curriculum is the language arts program. Language arts curriculum must be clearly defined in terms of desired results. Until these vital skills are in place, curriculum improvement should focus on language arts. Schools must have a language arts program that can meet the needs of all students, whatever their levels when they enter every class. For example, provision should be made for greater time allocation to language instruction on an as needed basis. Some students need language immersion - language arts instruction all day. Student needs, not Carnegie units or the "state curriculum" must drive time allocations. This single reform will result in dramatically improved student achievement. In this environment the extent to which your language (i.e. English) is limited, you are functionally handicapped.

While all schools should allocate time as needed to language instruction, elementary schools should generally allocate much more time to language instruction. The earlier and better students learn language, the faster and better they will learn everything else. We must stop requiring the impossible. We have no right to require all students to meet our predetermined curriculum at predetermined time intervals. We must design curriculum to be able to meet the needs of all students at any time.

Time, grade level or age should not determine any student's curriculum. Student needs and nothing else should. If student needs are not met, any other purposes are in vain. First and foremost among these student needs is the need for each student to master language sufficient to function in all subjects and classes.

Our present system is analogous to a hospital emergency room that can't help a patient coming in with a badly bleeding wound because this is 1:00 a.m. and at 1:00 a.m. we only treat infectious diseases. Time now drives school programs. You get one year to master high school biology, whether you need it or not.

When student needs drive curriculum, they will be admitted to biology only when they have demonstrated sufficient language achievement to master it.

They will finish biology only when they demonstrate mastery of specified knowledge/skills. Some students may take half of a year. Others may take a year and a half. We know that students learn at different rates. It makes no sense therefore to require that they all learn at the same rate. When we require the impossible, we shouldn't be surprised by failure. In fact, some students don't need thirteen years for our present K-12 program. Some can cover it in ten. Others need fifteen. Needs of students should drive time allocations for learning, not arbitrary time frames set up for the convenience of the bureaucratic system.

It should be noted that in a redesigned more effective curriculum, virtually all students will progress much faster than they are now. We are therefore really talking about speeding up learning for all. Thus greater language achievement will empower students to greater achievement across the board in all subjects with less time, work and other resources.

The sequence of instruction is vital here and must always ensure mastery of prerequisite language before requiring language dependent subjects. When we require students whose language is deficient to learn things that are clearly above their present language level, we require the impossible and make failure inevitable. This is analogous to teaching geography in English to a child who only speaks French: failure is built in and unavoidable. Such a student needs English immersion for as long as it takes to bring his language up to the speed required by the rest of the curriculum.

The 1990 census indicates that one million immigrants came to New York City between 1980 and 1990. Tens of thousands of non-English speaking students from all over the world entered the public schools. What typically happens to these students is driven by "the system" as it presently exists. Some get one period per day of English as a Second Language (ESL). They spend the other seven periods not learning in their other classes. They don't need biology, Shakespeare or American History. They need English. Restructured schools should meet their needs: English immersion. They should stay in English immersion until they master English at a level sufficient to succeed in biology, Shakespeare, American History. To put them into these classes without the necessary language is once again to build in failure. There is no reason basic concepts in science, social studies, etc. can't be taught in these language classes - always at language levels appropriate to students.

Where numbers of foreign speaking students are small, school districts and/or intermediate units should set up language immersion centers so students from various schools/districts can receive this essential language instruction. Limited English Proficiency (LEP) students are functionally learning disabled as long as their English Proficiency is limited. They should be immersed in English until their proficiency is not limited. Putting them in classes they can't understand guarantees failure.

Language deficiency is by no means limited to foreign-born students. Millions of native-born English speaking students have language development that is not sufficient for mastery of the rest of the curriculum. As much time as needed should be allocated to teaching these students the language they need for success in the rest of their education. Not to do so insures failure with all its accompanying problems. True mastery of any academic subject is totally predicated and dependent on prior mastery of necessary language.

Curriculum generally needs restructuring to meet the needs of all students. The very existence of Gifted & Talented programs is an indictment of the curriculum. When we pull out students for one period a day to meet their needs, we then return them for seven periods that don't. If the "regular" program met their needs, we wouldn't be pulling them out to meet their needs. The same is true for remedial programs. When we pull a compensatory student out for a period to meet his needs, we then return him for seven periods that don't. Students in remedial programs should be in English language immersion programs. Even though these students are native English speaking, their level of language achievement is too low. That is the simple reason 99% of them can't master the rest of the curriculum. Since language deficiency is the cause of failure, language instruction is the only (and obvious) cure. Putting language deficient students in classes they can't understand is a form of child abuse.

Essentially the present structure of schools requires students to adjust to the needs of the school. "We've got Carnegie units for you. Take it or leave it." This is backwards. We are the trained, paid professionals. The schools must reorganize the language arts curriculum first to meet the needs of the students.

Student Differences In Language Development

The failure to deal with (often failure to even recognize) individual student differences is by far the single most destructive structural practice in education.

A way to illustrate this is to consider language or reading levels of students in the same class. It is typical for teachers to have students in the same class with widely varied reading levels.

Example: Ms. Smith's 5th Grade Class has 25 students at 7 different reading levels:

Number of Students	Reading Grade Levels
2	1st
3	2nd
6	3rd
4	4th
5	5th
3	6th
2	7th

The teacher of this class typically teaches the entire 25 students at the 5th grade reading level. 15 students will thus be frustrated by work that is too hard for them while 5 will be bored by work that is too easy. 80% of the students will not learn. Only 5 students will receive instruction on an appropriate level. Even these 5 will learn less than they could because of the discipline problems that will inevitably occur with the 20 who are not engaged in learning.

Common practice in reading is to put students into groups for Basil Readers and/or other reading programs. This is an attempt to deal with differences but is ineffective. Group differences by definition are not individual differences. The above class would need 7 groups. The same is true for mathematics. Grouping is an inefficient response to dealing effectively with individual student levels. Even within these small groups there will still be individual differences that are not addressed.

Beyond the differences in levels within each group, students progress at different rates. Indeed each individual student's rate of learning will change throughout his life. The more a student learns, the more quickly he is able to learn.

Most instruction in reading and mathematics occurs in groups or whole classes at a time and ignores these critical differences in student levels of language achievement and rates of learning.

The critical areas of language and mathematics are both sequential. They proceed from simple to complex. The sequential nature of mathematics is obvious and will not be described here.

The sequential nature of language is illustrated by the frequency of use of vocabulary. More frequently used vocabulary must be learned before less frequently used. The less frequently used words are learned in the context of those more frequently used. For example, the word "door" is more frequently used than "entrance" or "exit" and therefore should be learned first.

Indeed all of learning proceeds from simple to complex. Each time a concept is learned it becomes context for learning new concepts.

Individual student differences might be further illustrated thus:

K = Known word

? = Unknown word

Student 1 has the strongest vocabulary; he knows 9 of 10 words:

K K K K K K ? K K K.

In the above sentence for example, 9 known words surround 1 unknown. The meaning of the unknown word can be learned from the context of the 9 known words. Since the student

knows 90 percent of the language he is reading, he can usually learn the new language easily without help. This is the student's independent learning level.

Student 2 has a lower vocabulary level; he knows 7 of 10 words:

K K K K ? ? K K ? K.

Since student 2 knows only 70% of the words he is reading, he will find learning 3 unknowns much more difficult. This is called the student's instructional learning level. With the assistance of a teacher he may learn some at a much slower rate, with difficulty. More likely, he will become frustrated and give up. Over time, many do.

Student 3 has the weakest vocabulary; he knows only 3 of 10 words:

K ? ? K ? ? ? ? K ?

Student 3 knows only 30% of the words he is reading; he will not be able to learn the 7 unknown words from this context. This is the student's frustration level. Even with a teacher he can not learn.

The three students illustrate three different levels of language development. To instruct them all on the same level means at least 2 of the three will not learn. (Of course they can all be instructed on an inappropriate level in which case none learn, a common situation, especially in secondary schools.)

Even students with the same approximate reading level will need to learn some different vocabulary. The above hardly begins to consider critical differences in students' present levels and skills of comprehension.

Failure to deal effectively with student differences guarantees frustration or boredom for the overwhelming majority of students and, due to discipline problems so created, substantially reduces learning for the rest as well. There is no gray area on this. Either we recognize and deal with these individual student language level differences or we don't. Unfortunately they are rarely recognized and dealt with in the present school system.

Since basic skills in language (and to an important extent mathematics) are the necessary prerequisites to mastery of the rest of the curriculum, failure in this area insures failure across the academic board. As long as students are required to use language that they don't understand, failure and discipline problems will continue to be the results. The most common cause of failure is language deficiency. The present system does not begin to cure this cause.

Solution 1 for language deficiency: effective individualized instruction

EFFECTIVE INDIVIDUALIZED INSTRUCTIONAL PROGRAMS RECOGNIZE AND ADDRESS THREE LEVELS OF LEARNING:

INDEPENDENT,
INSTRUCTIONAL,
FRUSTRATION.

In the section on student differences in language development I previously considered 3 different students with 3 different learning (i. e. language) levels.

Student # 1 recognized 9 of 10 words. This is a ratio of 9 to 1 known to unknown.

Student # 2 recognized 7 of 10 words. This is a ratio of 7 to 3 known to unknown.

Student # 3 recognized 3 of 10 words. This is a ratio of 3 to 7 known to unknown.

We can also see that each student can be faced by any and all of these three levels in various situations. When he is working on material in which (like student # 1) he recognizes 9 of 10 words he is working at his independent learning level. At this level he can learn without a teacher. Unknowns are presented at a rate that allows him to figure them out on his own.

We could give student # 1 material on a more difficult level in which he would recognize 3 of 10 words. At this level he can learn with difficulty with the help of a teacher. This is his instructional learning level. He cannot learn this material on his own, but with the help of a teacher he can.

We could also give student # 1 material on a much more difficult level at which he recognizes 3 of 10 words. This is his frustration level. At this level he cannot learn the material even with the help of a teacher.

In fact all of us have three learning levels throughout life. Today, with my 6 graduate degrees, there are things I can learn on my own, things I need a teacher to learn, and things I can't learn even with a teacher.

Many individualized programs either fail or are less effective than they could be because they do not recognize and deal with this reality. An individualized instructional program must maintain work for each student at their independent learning level so that they can progress individually at their own pace. The program must also provide for raising the difficulty level for each student as his or her independent level rises.

For an individualized program to work, each student must consistently be given work at his independent level so that he can learn on his own. The teacher becomes a tutor and coach to assist individual students as needed. Even though they can learn independently at this level they will still need teacher assistance from time to time. Because they work on their independent levels (where the ratio of knowns to unknowns is very high) the teacher is a resource who can assist students as needed. Many individualized programs fail because they give students work on their instructional level where they must consistently have a teacher's attention to learn or on their frustration level where they can't learn even with a teacher. This is the primary reason most attempts to individualize programs have failed. The teacher simply cannot manage the necessary responses to so many students at once.

This independent level must be consistently monitored for each student because it will rise as the student works in the program. If it is not adjusted to a more difficult level as the student progresses, he will become bored. Generally if a student is consistently getting 90 to 100% correct it is time to raise the level of his work.

Instead of organizing language curriculum as we currently do by grade levels, it should be organized by readability levels. For example, many schools have reading lists for students by grade levels. There are lists of books for first grade, lists for second grade, etc. These should be organized by difficulty levels. The fifth grade class cited above would not have only 5th grade materials but materials for grade levels Pre K through 12 and higher. Ideally each language teacher should have access to Pre K – 12 reading materials so that they can provide for any level of these students as needed. It is meaningless that the 25 students are in Ms. Smith's 5th grade class from a learning point of view. Functionally they are on 7 different grade/language levels and unless this fact is addressed appropriately there will be no learning for most and little for the rest.

Thus the scope and sequence of curriculum would have nothing to do with grade level. It instead presents a Pre K–12 sequence in reading and mathematics and students are placed in that sequence at the individual level that they need. They then proceed through the sequence at their own rate. Their rates tend to accelerate as they progress. (Other areas of learning beyond reading and mathematics will be described in the ideal instructional program for all students in my book.)

Some have said this will mean that some students will progress more slowly than others. While that is true, it is also true that all students will progress consistently, which is now far from true and more rapidly. It is also true that given time all will progress much faster and farther than in the present traditional structure.

The present structure not only fails those who are behind, but also holds back those that are ahead. In a well structured individualized program each year I had some 6th grade students reading on the 11th and 12th grade levels by June. It should be noted that the programs I refer to were in the South Bronx, one of the poorest and most crime-ridden areas of the country.

I have extensive experience with this individualized structure in reading and have seen amazing growth in student achievement. One boy came into my 6th grade class reading at the first grade level in September and left reading at the 6th grade level in June. Such rapid progress, 3 to 5 years growth in reading, in an effective individualized program is quite possible, in fact it is to be expected. I observed this consistently in poor minority students as well as others.

There have been many attempts to individualize instruction in the past. Most have failed because teachers could not manage 25 students each doing separate work. This management problem disappears when they are working on their independent level. The teacher then acts as a tutor working with individuals as they “get stuck.” This will happen occasionally even though they are working on their independent level, but much less frequently. The subsequent tutoring will be aimed a specific learning needs of each student tutored.

Unless and until students master the language necessary for various academic subjects, they are programmed for failure with all of its concomitant results – discipline problems, drop outs, family conflicts, and lives of economic and various other types of failure, destruction and ruin.

The Problem with Homework

Of all the problems schools face, perhaps none are more ubiquitous than those caused by present homework practices. Homework is a consistent source of problems for students, teachers and parents. Countless arguments occur every evening in homes across America. The primary cause of this is assignment of homework that is not on the student’s independent learning level. Thus students and parents conflict when the child cannot do homework that is above his independent or readiness level. Frequently both parents and students resent the school for assigning homework that the students can’t do causing alienation of home and school.

These evening arguments are followed each morning by countless conflicts in classrooms between students and teachers when the homework is not handed in or submitted in an unacceptable form. These conflicts further alienate students and teachers and build a negative attitude toward the school, the teacher and the subject in question.

Even worse, when students are confronted with an impossible requirement, they frequently chose to copy the homework of others (thus “cheating”) rather than face the consequences of failing to meet the impossible requirement. This “cheating” is a survival tactic. Nonetheless, the school is promoting cheating in this process. Of course when we catch them “cheating” on their homework we punish them for the problem that we created. This usually includes notifying parents, further adding to the conflict at home and alienation of both student and parent from school.

This chronic problem has chronic causes. The primary cause for these problems is that homework is frequently assigned beyond the individual student’s independent learning level. This means students cannot do the homework without help. Typically the only possible source

of this help is parents. They are frequently both working and very fatigued when they get home at night. Some parents are themselves not able to do the homework. Some parents are simply not there for their children. Ironically, the parent who is willing and able in fact does most homework done with “parent help.” Students get little or nothing out of it even though they hand it in.

The solution to these problems is to assign homework only at the independent learning level of each student so that they can do it themselves. When programs are individualized this is easily done. When they are not, the teacher must take extra care to ensure they are not assigning the impossible to any student thus unleashing the inevitable destructive consequences enumerated above.

There is a secondary cause of homework problems, most typically found at the secondary level where inordinate amounts of homework assigned are common. Most secondary teachers have no idea how much homework is being required from the students’ other 6 or 7 teachers each day. All too often it is a lot. When 6 of 7 teachers require a lot of homework at the same time, even if it is at the appropriate level for all students (which it almost never is), most of them rebel at the excessive amount.

The solution here is for secondary schools to coordinate the amount as well as the levels of homework assigned by each teacher each day.

Ironically, if the six hours a day devoted to classroom work were as effective as it could be, with no homework at all student achievement would be off the charts. Homework is a band-aid for a failing system that provides six hours a day of mediocre and ineffective instruction for most students. Homework is not the problem to begin with, and therefore not the solution. Nonetheless these two solutions will stop the negative impact of homework and make it of some possible value to students. Glasser says mandatory homework should be abandoned. I agree. Make the system work efficiently and homework will be unnecessary.

Portfolios for Individualized Instruction In Writing

Writing = thinking

While reading is the analysis of thought constructed by others, writing is more complicated and difficult. Writing is the construction of thought for others to analyze. It must be so clear that it can be understood on its own. All of the language arts are interactive. Improvement in any one brings corresponding improvement in the others. Nonetheless, writing is the ultimate form of language development. Speaking can always be clarified through questions and conversation. If there was to be one test for education, it should be a writing test. Anyone who can write clearly can think clearly and communicate clearly. Unfortunately, very few people can write clearly, even among those with masters and doctorate degrees. This is the ultimate indictment of the present educational system.

(I must digress to illustrate this point. The debate over weapons of mass destruction in Iraq shockingly illustrates the inability of most people, especially those who are highly educated, to think critically and clearly.

The “reasoning” goes as follows:

Premise 1: Most of the World believed that there were weapons of mass destruction in Iraq

Premise 2 We have searched Iraq (a country the size of California) and found no weapons of mass destruction.

Conclusion: Therefore there are (and were) no weapons of mass destruction in Iraq.

The obvious nonsequitur is completely missed by journalists, politicians (most of whom are educated at the masters level or above) and much of the citizenry. The only valid conclusion we can draw from this information is doubtful, i.e. no conclusion. They may or may not be there (or have been there). This is a glaring example of the product of the current education system in the United States.)

Like reading, writing is a very individual learning process. In this area many schools have made some real progress. Portfolios can be used to monitor individual student progress in writing. Dated writing samples can easily show the extent of each student's progress over time. Importantly, not only can the teacher monitor student progress, but the students can assess their own progress as well. The only assessment that brings excellence is self assessment, a theme to be repeated throughout my new book.

The key to successful use of portfolios is to keep them brief. Students should not keep every piece of work that they do. That would make monitoring progress difficult for the student and impossible for the teacher who has many students to monitor.

Portfolios can be used to monitor and coordinate student progress between grades and even between schools by simply passing on the portfolio at the end of the year to the next teacher. Records for reading and mathematics can also be included in portfolios. They should not be restricted to writing. Always keep in mind the critical need for brevity and focus in each portfolio.

Electronic Portfolios

Electronic portfolios now offer immense opportunity to individualize instruction in virtually all areas and across all grades. The onerous and unmanageable paperwork for record keeping that has defeated many individualized programs in the past is unnecessary. Most teachers who have tried to individualize and abandoned the effort did so for only one reason. They simply could not manage the record keeping for a class of 25 students (or 5 classes of 125 at the secondary level). Good computer software makes this easy.

While all areas of curriculum lend themselves to electronic portfolios, the critical areas of reading, writing and mathematics are especially amenable. Pre-k – 12 individual records can be maintained and passed along from grade to grade and school to school. Thus the programs for all students can be coordinated. This is helpful especially for students when they change grades or schools and especially for those that move frequently.

Individualized Instruction For Inclusion

Presently schools all across the country are struggling with how to include special education students in regular classes. In a good individualized program this is a non-issue. They are just more individuals, each working at their own level and rate. While they frequently are discipline problems in regular classes using group instruction, they behave fine when they are successfully learning at their own level and rate just like other students in an effective individualized program. Such a program will not only accomplish the goals of inclusion but also improve achievement of special education students and at the same time decrease costs as they are taught in regular classes.

In fact, an individualized program provides an IEP (individual educational program as required by federal law for all special education students) for all students. Unlike present IEP's in special education, these individualized programs work. The IEP concept is sound. Its implementation has been a dismal failure in virtually all special education settings. A good

individualized program provides an effective IEP in language and mathematics for all students, not just those in special education.

Individualized Instruction and Class Size for Cost Effectiveness

A great debate is raging over class size. Many believe that the key to improving student achievement is to reduce class size. This is obviously a very expensive solution. Even if resources are available, smaller classes will not address individual needs nearly as well as a good individualized program. Smaller classes are still group work.

While working in an intermediate school in the South Bronx with an individualized program as described above, I sometimes had 5 classes of as many as 38 students. I'm not advocating that number, but the fact is the individualized program worked in very large classes. Reducing class size is an effort to deal with individuals, but still in a group process, albeit smaller groups. Other things being equal, it is at least arguable (though not clearly proven despite years of research) that smaller class size is more effective than larger. The possible amount of benefit is minimal without individualizing instruction. Size is not the critical variable. Structure, how effectively each student's needs are met is. Individualized instruction is the most cost effective strategy to improve student achievement. It will cost far less and improve student achievement far more than decreasing class size or any other presently used strategy.

A note on individualized instructional programs. Many efforts to implement individualized programs have failed because teachers could not manage the variety of different levels. Appropriate training and program materials are the critical factors here. They must provide the teacher and the student with easy to use and manage resources. A well structured individualized program is actually much easier to implement than group work because it is far more engaging to students and results not only in higher achievement for all students but the concomitant good behavior and lack of discipline problems that always accompanies successful learning. It should be noted that I usually saw increases in reading of 3 to 5 years in a single year while working with minority students in this highly impoverished area

Another note. Some teachers believe that individualized programs can be "dehumanizing" because they stunt social growth by cutting down student interaction. The only programs that need to be individualized are reading, writing and mathematics. All the rest can be group programs as well as lunch, after school, weekends, summers and holidays. In fact individualized instructional programs improve student discipline and result in better social behavior. It is failure and consistent frustration, ignorance and illiteracy that is dehumanizing and presently rampant in our schools.

While the above has been and can be accomplished rather easily and effectively with traditional materials, it is even easier and more effective with computers. See Computers as teaching and learning tools in my book.

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