

WHY STUDENTS DON'T STUDY  
HOW YOU CAN MAKE STUDYING PAY OFF FOR THEM

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Working Paper # 89-15

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This paper is to appear in NASSP Bulletin, a publication of the National Association of Secondary School Principals. The research that has culminated in this paper was sponsored by the Center for Advanced Human Resource Studies, the National Center for Research in Vocational Education and the Secretary of Labor's Commission on Workforce Quality and Labor Market Efficiency. I would like to thank Peter Mueser, Richard Murnane and James Rosenbaum for helpful comments on earlier versions of the paper. This paper has not undergone formal review or approval of the faculty of the ILR school. It is intended to make results of Center research available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

## ABSTRACT

American high school students devote much less time and energy to their studies than the students of other nations. The cause of the lack of motivation is the lack of rewards for studying hard and for taking rigorous courses. This occurs for four reasons. First, the U.S. economy fails to give academic achievement its due reward in the labor market and rewards instead credentials that signify time spent, rather than competencies acquired. In most other countries credentials are more closely related to competencies obtained, so competencies acquired rather than just time spent are a more important determinant of prestige and income as an adult than they are in the U.S.

The second cause is the zero sum nature of academic competition and resulting peer pressure against studying hard. The most important signals of one's achievement--rank in class and GPA--are indicators of one's ranking relative to close friends not measures of performance on an absolute scale in the way a scout merit badge is. since studying hard makes things worse for friends, the peer group pressures everyone to take it easy.

The third reason is the almost total absence of school sponsored recognition of the academic achievements of students who are not at the very top of their class. Most students learn very early that they have no realistic chance of getting one of these prizes and their reaction is often to denigrate both the reward and the achievement it honors and to honor instead other forms of achievement --eg. athletics, being cool, being popular--which offer them better chances of success.

The fourth reason is the admissions criteria of the nation's better colleges and universities. In the United States these decisions are based almost entirely on (a) scores on the Scholastic Aptitude Test, a test which does not assess achievement in the science, history and math courses taken in high school and (b) high school class rank and GPA, a criterion that generates zero sum competition among classmates. In Japan and most of Europe, admission to the better universities and into the most selective programs of study are based largely on the student's performance on a battery of achievement exams taken at the end of secondary school (eg. "A" levels in the UK and the Baccalaureate in France).

The key to motivation is recognizing and rewarding learning effort and

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93 % of 17 year olds do not have "the capacity to apply mathematical operations in a variety of problem settings." (National Assessment of Educational Progress, 1988b p. 42)

25 % of the Canadian 18 year olds studying chemistry know as much chemistry as the top 1 % of American high school graduates (International Association for the Evaluation of Educational Achievement, 1988).

In October of 1985, 1986, 1987 and 1988, 28 percent of the previous June's noncollege-bound white high school graduates had no job. 55 percent of the black graduates had no job (Bureau of Labor Statistics 1989).

The high school graduates of 1980 knew about 1.25 grade level equivalents less math, science, history and English than the graduates of 1967. This decline in the academic achievement lowered the nation's productivity by \$86 billion in 1987 and will lower it by more than \$200 billion annually in the year 2010 (Bishop 1989).

In nearly every secondary school in America there is a huge gap between what youngsters are capable of learning and what they are learning. In nearly every work place there are young workers whose talents are being wasted in jobs that have been dumbed down to a lowest common denominator. We will see shortly that these two facts are causally related.

There is no real mystery as to why American high school students do poorly in these international comparisons of learning. They devote a lot less time and energy to the task of learning than students in other industrialized societies. American students average nearly 20 absences a year; Japanese students only 3 a year (Berlin and Sum 1988). School years are longer in Europe and Japan. Thomas Rohlen has estimated that Japanese high school graduates average the equivalent of 3 or 4 more years in a classroom and studying than American graduates.

Studies of time use and time-on-task show that American students actively engage in a learning activity for only about half the time they are in school. Studies have found that for reading and math instruction the average engagement rate is about 75 % (Fischer et al., 1978; Goodlad, 1983; Klein, Tyle, and Wright, 1979;). Overall, Frederick, Walberg and Rasher (1979) estimated 46.5 percent of the potential learning time was lost due to absence, lateness, and inattention.

In the High School and Beyond Survey, students reported spending an average of 3.5 hours per week on homework. When homework is added to engaged time at school, the total time devoted to study, instruction, and practice is only 18-22 hours per week -- between 15 and 20 % of the student's waking hours during the school year. By way of comparison, the typical senior spent 10 hours per week in a part-time job and about 24 hours per week watching television (A. C. Neilsen unpublished data). Thus, TV occupies as much time as learning. Students in other nations devote much more time to studying and so must spend considerably less time watching TV: 55% less in Finland, 70% less in Norway and 44% less in Canada (Organization of Economic Cooperation and Development, Table 18.1, 1986).

Even more important than the time devoted to learning is the intensity of the student's involvement in the process. At the completion of his study of American high schools, TheodoreSizer (1984) characterized students as, **"All too often docile, compliant, and without initiative.(p. 54)"** John Goodlad (1983) described: **"a general picture of considerable passivity among students...(p. 113)"**. The high school teachers surveyed by Goodlad ranked "lack of student interest" and "lack of parental interest" as the two most important problems in education.

The student's lack of interest makes it difficult for teachers to be demanding. Sizer's description of Ms. Shiffe's class, illustrates what sometimes happens:

Even while the names of living things poured out of Shiffe's lecture, no one was taking notes. She wanted the students to know these names. They did not want to know them and were not going to learn them. Apparently no outside threat--flunking, for example--affected the students. Shiffe did her thing, the students chattered on, even in the presence of a visitor....Their common front of uninterest probably made examinations moot. Shiffe could not flunk them all, and, if their performance was uniformly shoddy, she would have to pass them all. Her desperation was as obvious as the students cruelty toward her."(p. 157-158)

Some teachers are able to overcome the obstacles and induce their students to undertake tough learning tasks. But for most, the student's lassitude is demoralizing. As one student put it:

As it stands now, there is an unending, ever increasing cyclic problem. Teacher and administrator disinterest, apathy, and their lack of dedication results in students becoming even more unmotivated and docile, which in turn allows teachers to be less interested and dedicated. If students don't care, why should teachers? If teachers don't care, why should the

students? (Krista, 1987)

Yes, it is a classic chicken versus egg problem. Teachers are assigned responsibility for setting high standards but we do not give them any of the tools that might be effective for inducing student observance of the academic goals of the classroom. They finally must rely on the force of their own personalities. All too often teachers compromise academic demands because the bulk of the class sees no need to accept them as reasonable and legitimate.

### The Apathy of Parents and School Boards

The second major reason for the low levels of achievement is parental and school board apathy. When 2829 high school sophomores were asked in 1987 whether "My parents...think that math (science) is a very important subject," 40 percent said no with respect to math and 57 percent said no for science (Longitudinal Survey of American Youth, Q. AA19Q-AA19R). Only 30 percent of 10th graders reported their parents "want me to learn about computers" (LSAY, Q. AA19D).

A comparative study of primary education in Taiwan, Japan and United States found that **even though American children are far behind Taiwanese and Japanese children in mathematics capability, American mothers are much more pleased with the performance of their local schools than Taiwanese and Japanese mothers.** When asked "How good a job would you say \_\_\_'s school is doing this year educating\_\_\_", 91 percent of American mothers responded "excellent" or "good" while only 42 percent of Taiwanese and 39 percent of Japanese parents were this positive (Stevenson 1983). Clearly, American parents hold their children and their schools to lower academic standards than Japanese and Taiwanese-- as well as European -- parents. Why is this the case?

### Incentives for Effort and Learning in High School

The fundamental cause of student and parental apathy is the absence of good signals of effort and learning in high school and a consequent lack of rewards for effort and learning. Signals of learning like years of schooling are handsomely rewarded. In 1987 25 to 34 year old male (female) college graduates working full time full year earned 41 (48) percent more than comparable high school graduates and high school graduates earned 21 (23) percent more than high school dropouts. These rewards have significant effects

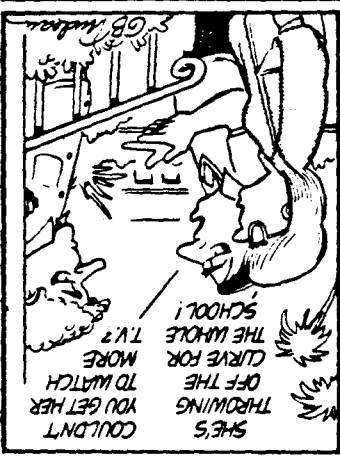
on student enrollment decisions. When the payoff to a college degree for white males fell in the early 1970s, their college attendance rates fell. When the payoff rose again in the 1980s, male college attendance rates rose. Years of schooling is only a partial measure of learning accomplishment, however.

In contrast to years spent in school, the effort devoted to learning in high school and the actual competencies developed in high school are generally not well signaled to colleges and employers. Consequently, while students are generously rewarded for staying in school, the students who do not aspire to attend selective colleges benefit very little from working hard while in high school. The lack of incentives for effort and learning accomplishment is a consequence of three phenomena:

- \* The peer group actively discourages academic effort.
- \* Admission to selective colleges is not based on an absolute or external standard of achievement in high school subjects. It is based instead on aptitude tests which do not assess the high school curriculum and on such measures of student performance such as class rank and grade point averages, which are defined relative to classmates' performances not relative to an external standard.
- \* The labor market fails to reward effort and achievement in high school.

### The Zero-Sum Nature of Academic Competition in High School

An important cause of high school students' poor motivation is peer pressure against studying hard. Students who study hard are called "nerds" by their classmates. Peers discourage study primarily because the pursuit of academic success forces students into a zero-sum competition with their classmates. Their achievement is not being measured against an absolute, external standard. In contrast to scout merit badges, for example, where recognition is given for achieving a fixed standard of competence, the schools' measures of achievement assess performance relative to fellow students through grades and class rank. When students try hard to excel, they set themselves apart, cause rivalries and may make things worse for friends. When we set up a zero sum competition among close friends, we should not be surprised when they decide not to compete. All work groups have ways of sanctioning "rate busters." High school students call them "brain geeks," "grade grubbers," and "brown nosers."



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Young people are not lazy. In their jobs after school and on the football field, they work very hard. In these environments they are part of a team where individual efforts are visible and appreciated by teammates. Competition and rivalry are not absent, but they are offset by shared goals, shared successes and external measures of achievement (i.e. satisfied customers or winning the game). On the sports field, there is no greater sin than giving up, even when the score is hopelessly one sided. On the job, tasks not done by one worker will generally have to be completed by another. In too many high schools, when it comes to academics, a student's success is purely personal.

The second reason for peer norms against studying is that most students perceive the chance of receiving recognition for an academic achievement to be so slim they have given up trying. At most high school awards ceremonies, the academic recognition goes to only a few--those at the very top of the class. By 9th grade, most students are already so far behind the leaders, that they know they have no chance of being perceived as academically successful. Their reaction is often to dismiss the students who take learning seriously and to honor other forms of achievement--athletics, dating, holding their liquor, and being "cool"--which offer them better chances of success.

### College Selection Criteria

In Canada, Australia, Japan, and Europe, educational systems administer achievement exams which are closely tied to the curriculum. With the exception of Japan, all of these exams use an extended answer format. Performance on these exams is the primary determinant of admission to a university and to a field of study and good grades on the toughest exams--physics, chemistry, advanced mathematics--carry particular weight. In the United States, by contrast, the national tests which influence college admission decisions--the SAT and the ACT--are multiple choice exams that do not assess the student's knowledge and understanding of literature, history, science and technology.<sup>1</sup> The American exams that are similar to those administered in Canada, Australia and Europe--the Advanced Placement exams--are taken by only 6.6 percent of high school seniors and have little impact on college admission decisions.

High school grade point averages and class rankings have substantial effects on who is admitted to the most prestigious colleges. Since most classes



are graded on a curve, **taking more rigorous courses lowers the student's grade point average.**<sup>1</sup> Many college admission officers try to factor course difficulty into their evaluations, but most high school students still believe that A's in regular classes are better than B's in honors classes. The result is that many students avoid taking the more demanding courses. The second problem with the use of GPA and class rank as college admission criteria is that it results in zero-sum competition between classmates and consequently contributes to peer pressure against studying and parental apathy about the quality of teaching and the rigor of the curriculum.

### The Absence of Major Economic Rewards for Effort in High School

Students who plan to look for a job immediately after high school typically spend less time on their studies than those who plan to attend college. In large part, most see very little connection between how much they learn and their future success in the labor market. Less than a quarter of 10th graders believe that geometry, trigonometry, biology, chemistry and physics are needed to qualify for their first choice occupation (LSAY, Q. BA24B-BA25D). Statistical studies of the youth labor market confirm their skepticism about the current benefits of taking tough courses and studying hard:

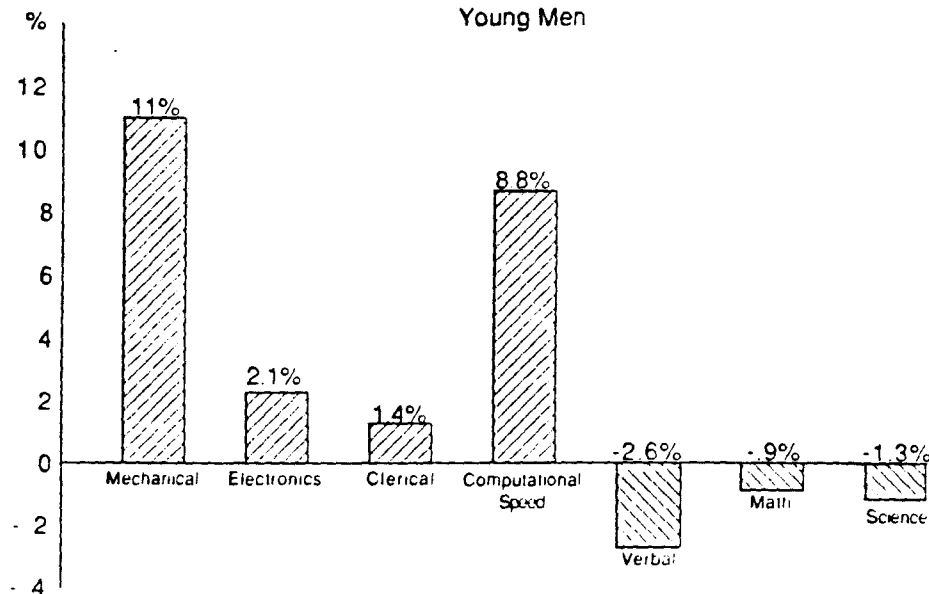
- ° For students seeking part-time employment while attending high school, grades and performance on academic achievement/aptitude tests have essentially no impact on labor market success. They have -
  - no effect on the chances of finding work when one is seeking it during high school, and
  - no effect on the wage rate of the jobs obtained while in high school (Hotchkiss, Bishop & Gardner, 1982).

[Figure 1 and 2 about here]

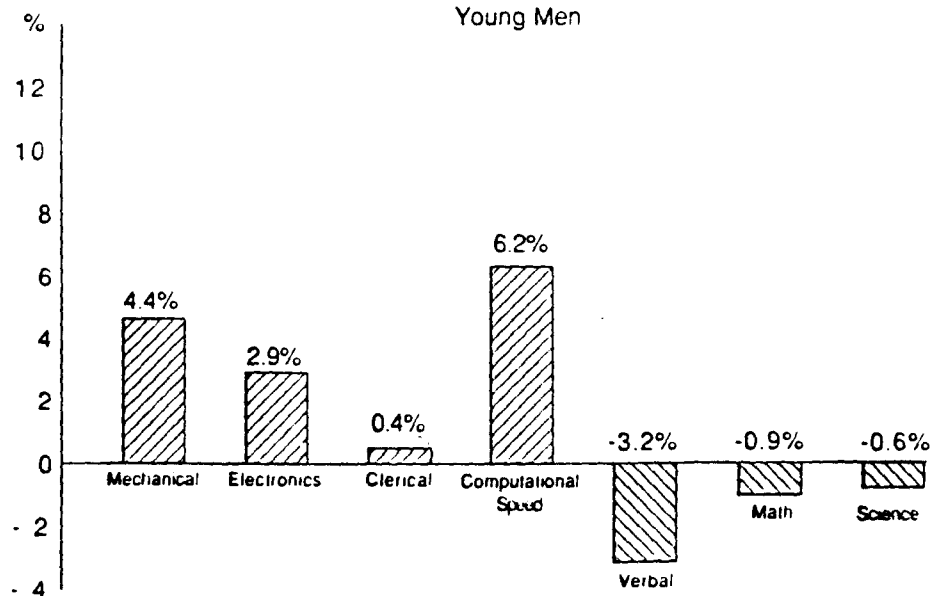
- ° Results of an analysis of the Youth Cohort of the National Longitudinal Survey are summarized in figures 1 and 2 (Bishop, 1988b). It was found that during the first 8 years after leaving high school, young men received no rewards from the labor market for developing competence in science, language arts and mathematical reasoning. The only competencies that were rewarded were speed in doing simple computations (something that calculators do better than people) and technical competence (knowledge of mechanical principles, electronics, automobiles and shop tools). For the non-college bound female, there were both wage rate and earnings benefits to learning advanced mathematics but no benefits to developing competence in science or the technical arena. Competence in language arts did not raise wage rates but it did reduce the incidence of unemployment. For both males and females, age increased the payoff to computational speed but had no effect on the payoff to the verbal, scientific and mathematical reasoning competencies.

Figure 1

Effect of Competencies  
on Earnings, 1984-1985  
Young Men



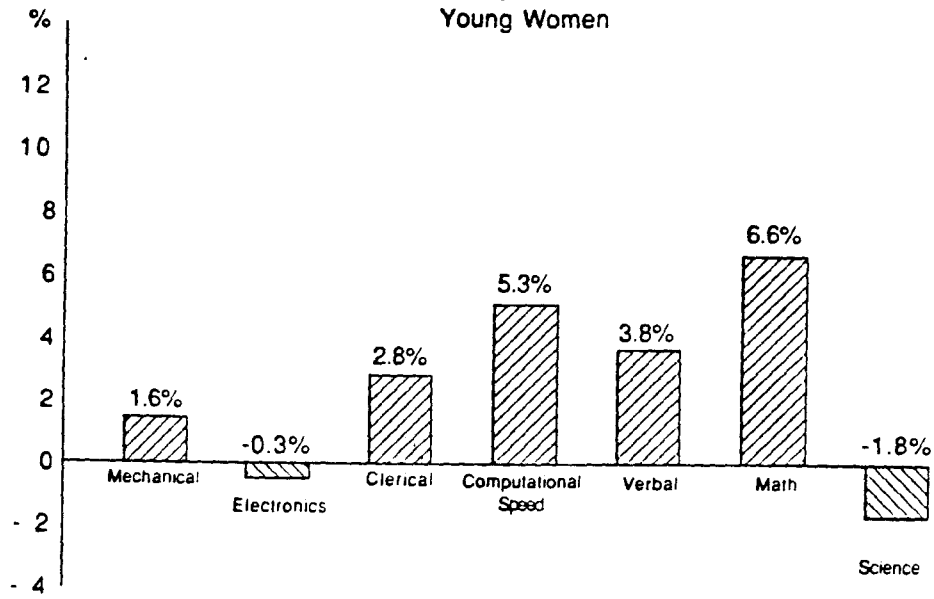
Effect of Competencies  
on Wage Rates, 1983-1986  
Young Men



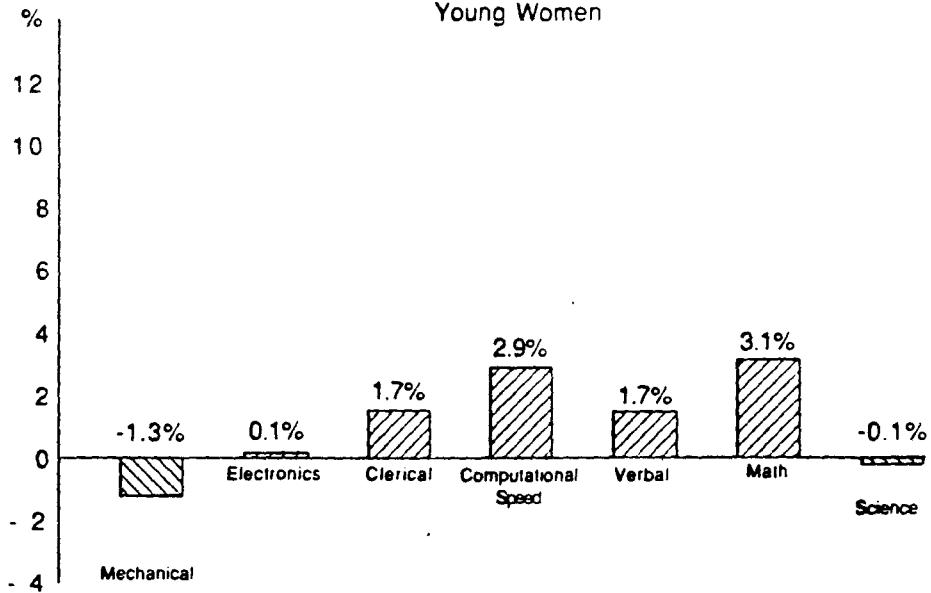
Source: Analysis of NLS Youth data. The figure reports the effect of a one population standard deviation increase in Armed Services Vocational Aptitude Battery subsets while controlling for schooling, school attendance, age, work experience, region, SMSA residence and ethnicity.

Figure 2

Effect of Competencies  
on Earnings, 1984-1985  
Young Women



Effect of Competencies  
on Wage Rates, 1983-1986  
Young Women



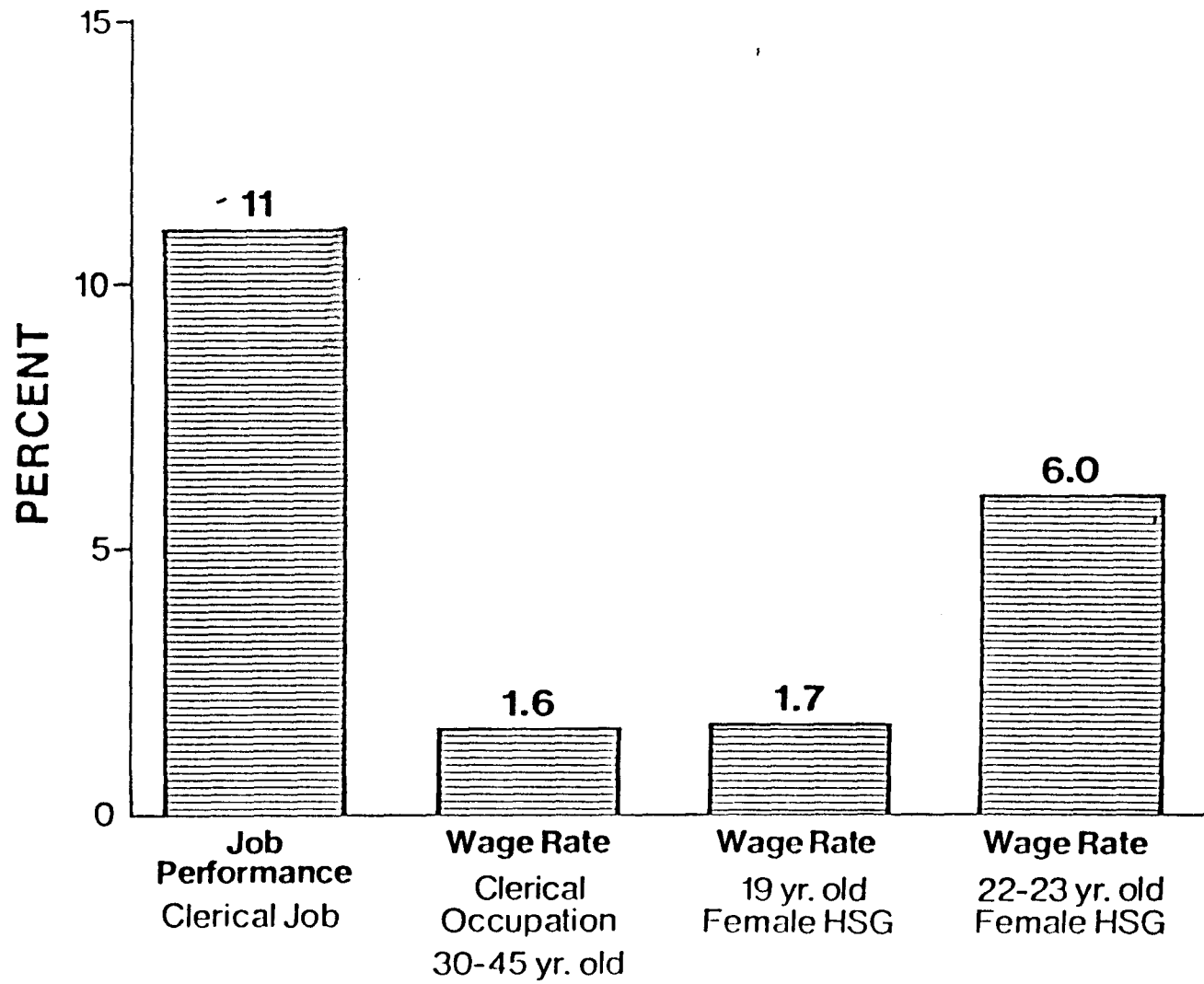
Source: Analysis of NLS Youth data. The figure reports the effect of a one population standard deviation increase in Armed Services Vocational Aptitude Battery subtest while controlling for schooling, school attendance, age, work experience, region, SMSA residence and ethnicity.

The long delay before labor market rewards are received is important because most teenagers are short sighted and unable to borrow against their future earnings, so benefits promised for 10 years in the future may have little influence on their decisions.

Although the economic benefits of higher achievement to the employee are quite modest and do not appear until long after graduation, the benefits to the employer (and therefore, to national production) are immediately realized in higher productivity. Over the last 80 years, industrial psychologists have conducted hundreds of studies, involving hundreds of thousands of workers, on the relationship between productivity in particular jobs and various predictors of that productivity. They have found that scores on tests measuring competence in reading, mathematics, science and problem solving are strongly related to productivity in almost all of the civilian jobs studied (Ghiselli 1973; Hunter 1983). Studies conducted by the military similarly find that scientific, technical and mathematical reasoning competencies have large effects on both paper and pencil measures of job knowledge and hands-on measures of job performance (Hunter, Crosson and Friedman 1985). A recent study of Marine recruits found, for example, that holding a battery of other tests constant that a four grade level equivalent increase in two mathematical reasoning subtests increased the soldier's productivity by 6% in skilled technical jobs, by 8% in skilled electronic jobs, by 10% in construction jobs and by 14% in clerical jobs. Verbal and science subtests also had significant effects on job performance. A one standard deviation increase in mechanical and technical knowledge resulted in a 13% improvement in productivity in non-clerical jobs in the military (Bishop 1988b).

Figure 3 compares the percentage effect of mathematical and verbal achievement (specifically a difference of three grade level equivalents in test scores or .7 GPA points (on a 4 point scale) on the productivity of a clerical worker, on wages of male clerical workers (Taubman & Wales, 1975), and on the wages of young women who have not gone to college (Kang & Bishop, 1984; Meyer, 1982). Productivity clearly increases much more than wage rates. Apparently, when a non-college-bound student works hard in school and improves his or her competence in language arts, science and mathematical reasoning, the youth's employer reaps much of the benefit.

Figure 3



(Figure 3 about here)

Despite their higher productivity, young workers who have achieved in high school do not receive appreciably higher wage rates after high school. The student who works hard must wait many years to reap rewards, and even then the magnitude of the wage and earnings effect--a 1 to 2 % increase in earnings per grade level equivalent on achievement tests--is hardly much of an incentive. It is considerably smaller than the actual gain in productivity that results.

#### Incentives to Upgrade Local Schools

The lack of external standards for judging academic achievement and the resulting zero sum nature of academic competition in the school also influences parents, school boards, and voters in school tax referenda. Parents can see that setting higher academic standards or hiring better teachers will not on average improve their child's rank in class or GPA. The Scholastic Aptitude Test does not assess knowledge and understanding of science, history, social science, trigonometry, statistics and calculus or the ability to write an essay. Consequently, improving the teaching of these subjects at the local high school will have only minor effects on how my child does on the SAT, so why worry about standards? In any case, doing well on the SAT matters only for those who aspire to attend a selective college. Most students plan to attend open entry public colleges which admit all high school graduates from the state with the requisite courses. Most scholarships are awarded on the basis of financial need, not academic merit.

The parents of children not planning to go to college have an even weaker incentive to demand high standards at the local high school. They believe that what counts in the labor market is getting the diploma, not learning algebra. They can see that learning more will be of only modest benefit to their child's future, and that higher standards might put at risk what is really important--the diploma.

Those without children in the public schools have the weakest incentive of all. Only a minority of the students remain in the local school district after graduating, so the taxpayers who must foot the bill for quality local schools will receive very few of its benefits.

Only when educational outcomes are aggregated, at the state or national levels, do the real costs of mediocre schools become apparent. The whole

community loses because the work force is less efficient, and it becomes difficult to attract new industry. Competitiveness deteriorates and the nation's standard of living declines. This is precisely why employers, governors, and state legislatures have been the energizing force of school reform. State governments, however, are far removed from the classroom. If educational reform is to succeed, it must spring from the grassroots.

### Why Top Firms Do Not Hire Your Graduates

One of the saddest consequences of the lack of signals of achievement in high school is that employers with good jobs offering training and job security are unwilling to take the risk of hiring a recent high school graduate. In Europe and Japan high school graduates are hired by top companies straight out of high school. Companies in Europe are willing to hire recent graduates because the grades on school leaving exams--which are on most resumes and requested on job applications--allow the company to assess the competence and reliability of young people with no work experience. A resume used by an Irish secondary school graduate seeking a clerical job is reproduced in Exhibit 1. In Japan, clerical, service and blue collar jobs at the best firms are available only to those recommended by their high school. The criteria by which the high school is to make its recommendations is, by mutual agreement, grades and exam results (Rosenbaum and Kariya 1987).

In the US the top employers ignore recent high school graduates and consider only applicants with extensive work experience. One important reason for this policy is that the applicant's work record serves as a signal of competence and reliability that help the employer identify who is most qualified. In the US recent high school graduates have no such record and information on the student's high school performance is not available, so the entire graduating class appears to employers as one undifferentiated mass of unskilled and undisciplined workers. Their view of 18 year olds was expressed by a supervisor at New York Life Insurance who commented on television **"When kids come out of high school, they think the world owes them a living"** (PBS, March 27, 1989). Surely this generalization does not apply to every graduate, but the students who are disciplined and academically well prepared currently have no way of signaling this fact to employers.

Employers believe that school performance is a good predictor of job

CURRICULUM VITAE

NAME:

ADDRESS:

DATE OF BIRTH:

AGE:

NATIONALITY:

TELEPHONE NO:

EDUCATIONAL DETAILS

Primary School

Post Primary

Secretarial Course

Office Procedures Course

EXAMINATIONS

Intermediate Certificate 1985

SUBJECTS

English	B - L.C.
Irish	C - L.C.
Maths	B - L.C.
Science	C
Geography	C
History	C
Home Economics	D

Leaving Certificate 1987

SUBJECTS

English	D - L.C.
Irish	C - L.C.
Maths	C - L.C.
Biology	C - H.C.
Geography	C - L.C.
French	D - L.C.
Home Economics	B - L.C.



performance. When they have grade point average information, it has a major effect on the ratings they assign to job applicants in policy capturing experiments (Hollenbeck and Smith, 1984). However, they have great difficulty getting information on school performance. If a student or graduate has given written permission for a transcript to be sent to an employer, the Buckley amendment obliges the school to respond. Many high schools are not, however, responding to such requests. In Columbus Ohio, for example, **Nationwide Insurance sent over 1,200 requests for transcripts signed by job applicants to high schools in 1982 and received only 93 responses.**

There is an additional barrier to the use of high school transcripts in selecting new employees--when high schools do respond, it takes a great deal of time. For Nationwide Insurance the response almost invariably took more than 2 weeks. Given this time lag, if employers required transcripts prior to making hiring selections, a job offer could not be made until a month or so after an application had been received. Most jobs are filled much more rapidly. In too many high schools the system for responding to transcript requests has been designed to meet the needs of college-bound students rather than the students who seek jobs immediately after graduating. The result is that a 1987 survey of a stratified random sample of small-and medium-sized employers who were members of the National Federation of Independent Business [NFIB] found that transcripts had been obtained prior to the selection decision for only 14.2% of the high school graduates hired. Only 15% had asked high school graduates to report their grade point average. The absence of questions about grades from most job applications reflects the low reliability of self reported data, the difficulties of verifying it, and the fear of EEO challenges to such questions.

Hiring on the basis of recommendations by high school teachers is also uncommon. In the NFIB survey, when a high school graduate was hired, the new hire had been referred or recommended by vocational teachers in only 5.2% of the cases and referred by someone else in the high school in only 2.7%. Tests are available for measuring competency in reading, writing, mathematics, science, and problem solving, but EEOC guidelines resulted in a drastic reduction in their use after 1971. The NFIB survey found that aptitude test scores had been obtained in only 2.9 % of the hiring decisions studied.

## II. How You Can Make Studying Pay Off For Your Students

The key to motivation is recognizing and rewarding learning effort and achievement. Some students are attracted to serious study by an intrinsic fascination with the subject. However, they must pay a heavy price in the scorn of their peers and lost free time. Society offers them little reward for their effort. Most students are not motivated to study by a love of the subject. Sixty-two percent of 10th graders agree with the statement "I don't like to do any more school work than I have to" (LSAY, Q. AA37N). If this situation is to be turned around, the peer pressure against studying must be reduced and the rewards for learning must be increased. The full diversity of types and levels of accomplishment need to be signaled so that everyone--no matter how advanced or far behind--faces a reward for greater time and energy devoted to learning. Learning accomplishments need to be described on an absolute scale so that improvements in the quality and rigor of the teaching and greater effort by all students make everybody better off. If employers know who the academic achievers are, they will provide the rewards needed to motivate study. Ninety-two percent of 10th graders say they "often think about what type of job I will be doing after I finish school"(Longitudinal Survey of American Youth, Question AA13C). If the labor market were to begin rewarding learning in school, students would respond by studying harder and local voters would be willing to pay higher taxes so as to have better local schools.

Some might respond to this strategy for achieving excellence by stating a preference for intrinsic over extrinsic motivation of learning. This, however, is a false dichotomy. Nowhere else in our society do we expect people to devote thousands of hours to a difficult task while receiving only intrinsic rewards. Public recognition of achievement and the symbolic and material rewards received by achievers are important generators of intrinsic motivation. They are, in fact, one of the central ways a culture symbolically transmits and promotes its values.

There are many things that principals, teachers and local school boards can do to improve incentives for learning. I have grouped my suggestions under three headings: (1) more powerful school administered incentives for academic achievement, (2) inducing top employers to hire your graduates and (3) inducing top colleges to admit your graduates.

## 2.1 School Based Rewards for Learning

### Cooperative Learning

One effective way of inducing peers to value learning and support effort in school is to reward the group for the individual learning of its members. This is the approach taken in cooperative learning. Research results (Slavin 1985) suggest that the two key ingredients for successful cooperative learning are as follows:

- A cooperative incentive structure--awards based on group performance--seems to be essential for students working in groups to learn better.
- A system of individual accountability in which everyone's maximum effort must be essential to the group's success and the effort and performance of each group member must be clearly visible to his or her group mates.

For example, students might be grouped into evenly matched teams of 4 or 5 members that are heterogeneous in ability. After the teacher presents new material, the team works together on work sheets to prepare each other for periodic quizzes. The team's score is an average of the scores of team members, and high team scores are recognized in a class newsletter or through group certificates of achievement.

What seems to happen in cooperative learning is that the team develops an identity of its own, and group norms arise that are different from the norms that hold sway in the student's other classes. The group's identity arises from the extensive personal interaction among group members in the context of working toward a shared goal. Since the group is small and the interaction intense, the effort and success of each team member is known to other teammates. Such knowledge allows the group to reward each team member for his or her contribution to the team goal, and this is what seems to happen.

### Turn Schools into All Day Learning Centers

Schools should remain open after the end of the regular school day and a full range of remedial and enrichment programs and extra curricular activities and interscholastic sports should be offered. Students who are having difficulty in their courses should receive extra help during this period.

### Keep the Schools Open During the Summer

Longitudinal studies of learning have found that the pace of learning slows considerably during the summer and that disadvantaged students especially

lose ground during the summer months (Heyns 1987). Experimental evaluations of STEP, a program for disadvantaged youth that combines a part time summer job with about 90 hours of remediation, has found that adding the remediation to the summer job results in gains in academic achievement of .5 grade level equivalents (Corporation for Public Private Ventures 1988). It would appear that summer programs targeted on educationally and economically disadvantaged children are likely to have high payoffs.

#### A Massive Dose of Mastery Learning

At many of the schools offering remedial instruction after school and during the summer, students who are not making normal progress are in effect required to participate (eg. participation is necessary for promotion to the next grade). The required nature of the extra study time is highly desirable for the natural desire to have more time free will be a powerful incentive for all students to devote themselves to their studies during regular school hours. More schools should adopt this strategy.

At the beginning of the school year school personnel would meet with the student and his or her parents to set goals. Students who are not performing at grade level in core subjects and who do not make normal progress during the school year should be kept after school for tutoring and remedial instruction and required to attend summer school. Assessments of progress should be made at appropriate points during the school year to inform students of their progress and to enable those who are participating in remedial programs after school to demonstrate they are now progressing satisfactorily. Course grades and teacher evaluations would be part of the assessment process, but there should be an external yardstick as well. The external yardstick might be a competency check list, a mastery test keyed to the textbook, or an exam specified by the state, the school or collectively by the teachers in the that grade level or department. The reason for the external yardstick is that it helps insure that students perceive the standard to be absolute rather than relative to others in the class, and it helps create a communality of interest between teacher and student. Teachers need to be perceived as helping the student achieve the student's goals not as judges meting out punishment.

#### Honoring Academic Achievement

