

[Physics teacher
Norman Stonehouse]

*straightens the room at
the end of class, and
the students trickle out
the door. The boys and
girls talk animatedly,
but not about gossip,
or sports, or music.
They talk about
physics.*

"A Day in the Life of
Three Schools," Scientific
American, October 1999

THE SYSTEM

INCENTIVES FOR LEARNING AND TEACHING

Classrooms are full of students who are unconvinced they need to be there, let alone do well in school. Without adequate motivation to study, take hard courses, and get good grades, students do just enough to get by. How does a teacher face the dual challenge of helping students learn and getting them to want to learn? How do we get both teacher and student to do better than they are doing now?

Recent studies of American high school students suggest that many see little reason to take school seriously:

- Over 50 percent of students say they could bring home grades of C or worse without their parents getting upset. Twenty-five percent say they could bring home grades of D or worse without upsetting parents.¹
- Nearly 20 percent of students “do not try as hard as they can in school because they are worried about what their friends might think.” Over one-third get through the school day primarily by “goofing off with friends.”²
- Students in Beijing and Chicago were asked to rate the importance of effort and innate ability in influencing their performance at school. Students in both cities agreed that effort was “very important.” However, American students rated the influence of innate ability much higher than did the Chinese.³
- To students, current college and university admissions policies appear to put more emphasis on SAT and ACT scores than on academic performance in high school. Students take separate tests for a high school grade, for graduation, for college admission, and for college course placement. The connections among them are not clear.

High school students with no intention of going on to college may be the most difficult to motivate. Why should they work hard in school when they can get a job without good grades?

- Companies that hire high school graduates rarely, if ever, ask to see transcripts or school records.⁴
- Among young adults who hold full-time jobs two years after graduation from high school, those who held a part-time job while in high school earn \$250-\$350 per month more than those who did not have a job while in high school.⁵ High school grades have no relationship to earnings two years after graduation.
- Two-thirds of high school students are employed, and half work over 15 hours per week.⁶ More high school youth are employed during the school year in the U.S. than in any other country.⁷

As education reform efforts place higher expectations on teachers to help reverse the disappointing performance of American students,⁸ compensation for teachers lags behind those of other professions:

- Teacher salaries are lower than salaries for all of the following professions: Physicians; lawyers; electrical engineers; marketing, advertising, and public relations professionals; financial managers; computer systems analysts; education administrators; accountants and auditors; property and real estate managers; and food service and lodging managers.⁹
- In Ohio, the situation for beginning teachers is even more difficult. His or her salary is about \$3,000 less per year than the national average.¹⁰

Routes and Destinations

The Education Commission of the States (ECS) recommends a set of incentives for students and teachers, including the following:¹¹

Incentives for Students

- **Standards for graduation from high school**

Recommendations include requiring students to take a larger core of academic classes and to achieve an aggressive minimum score on end-of-course exams or comprehensive exit exams before graduating. More challenging academic course requirements produce higher levels of academic achievement, both overall and among lower-performing students.¹²

- **Clear and specific requirements for admission to higher education**

Clarifying standards and expectations could persuade students that academic performance in high school matters.¹³

- **Academic requirements for employment or apprenticeship programs**

The National Alliance of Business (NAB) campaign *Making Academics Count* encourages companies of all sizes to ask applicants for high school records as part of the hiring process. Currently, 13,000 companies say they participate in the initiative. The NAB has set a goal of 20,000 by the summer of 2000.¹⁴

Incentives for Teachers

- **Goal clarification via mission, standards, and testing**

Research shows that setting clear goals and standards for students helps and motivates teachers by giving them clear targets as well. In districts that have instituted these strategies, teachers report knowing for the first time in their professional lives where to focus their energies.¹⁵

- **Opportunities to work collaboratively at the school site**

In any profession, workers are happier when they are involved in key decisions affecting their work environment. When school districts provide teachers with opportunities to participate in school organization, management, decision making, and leadership, teachers become more engaged and involved. They willingly work more hours on multiple tasks, while morale and enthusiasm increase.¹⁶ When these opportunities focus on efforts to improve, real gains in teacher engagement and student learning are likely.

- **Incentives to increase knowledge and skills**

Providing monetary incentives for teachers may motivate them to pursue the additional knowledge and skills necessary to work with more rigorous curricula.¹⁷

- **Incentives to improve student achievement**

Some states and districts are offering salary bonuses to staff for raising student achievement to specific levels. “School-based performance awards” can focus teacher and school attention in areas of weak student performance.¹⁸ Teacher contracts are beginning to reflect this relationship.¹⁹

Unfortunately, the scene in Mr. Stonehouse’s physics classroom is not the norm in U.S. schools. Results from the Third International Mathematics and Science Study (TIMSS) show that American math and science students are being soundly outperformed by their counterparts from around the world.²⁰ Japanese high school students continue their tradition of strength in math and science, while Americans continue to lose ground. Interest and academic excellence in math and science are bred deep into Japanese culture. The opposite is true in the United States.

The seeds of apathy toward math and science education in America seem to be planted even before children arrive at school. When they do arrive though, how can we be sure they encounter a teacher with not only a wealth of math or science knowledge, but a passion for teaching it as well? If teachers aren’t excited to be in the classroom, students won’t be either.

Endnotes

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