

POLICY BRIEF 2011-07

## The Power and Pitfalls of Education Incentives

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# The Power and Pitfalls of Education Incentives

*Parents may reward kids* with an extra allowance or ice cream if they do their homework or spend a specified amount of time reading. Classroom teachers may offer gold stars for high test grades or good behavior. For many children, incentives already play a role in education. At the same time, America's schools search for new approaches to boost student achievement. Despite this, most schools have not tried to apply monetary incentives in any systematic way.

In a new paper for The Hamilton Project, "The Powers and Pitfalls of Education Incentives," Brad Allan and Roland Fryer offer advice on designing incentive programs for children based on a number of experiments where they provided incentives for grades and test scores, as well as for things such as doing homework, reading books, and attending school every day. They argue that incentives have some power to improve student achievement and outline the critical elements of an incentive program.

## The Challenge

The United States is failing to educate its poorest, most disadvantaged students. Black and Latino student performance on international assessments falls at around the same level as student performance in Mexico and Turkey. In every major American city, over three-quarters of black or Latino eighth graders are below proficient levels in math or reading.

Prior attempts to raise the performance of disadvantaged students have been largely unsuccessful. Per pupil spending increased from \$5,200 in 1970 to \$12,000 in 2007 without any commensurate gains in student achievement. Similarly, teachers today are much more likely to have a Master's degree, but this has also failed to raise achievement.

At the same time, we know that gains are possible. New charter schools like the Knowledge Is Power Program (KIPP) and the Harlem Children's Zone have raised achievement by enough to halve the black-white achievement gap in three years. But only a small fraction of children can go to charter schools like these. Nor has their success shed any light on what existing schools can do to raise student achievement.

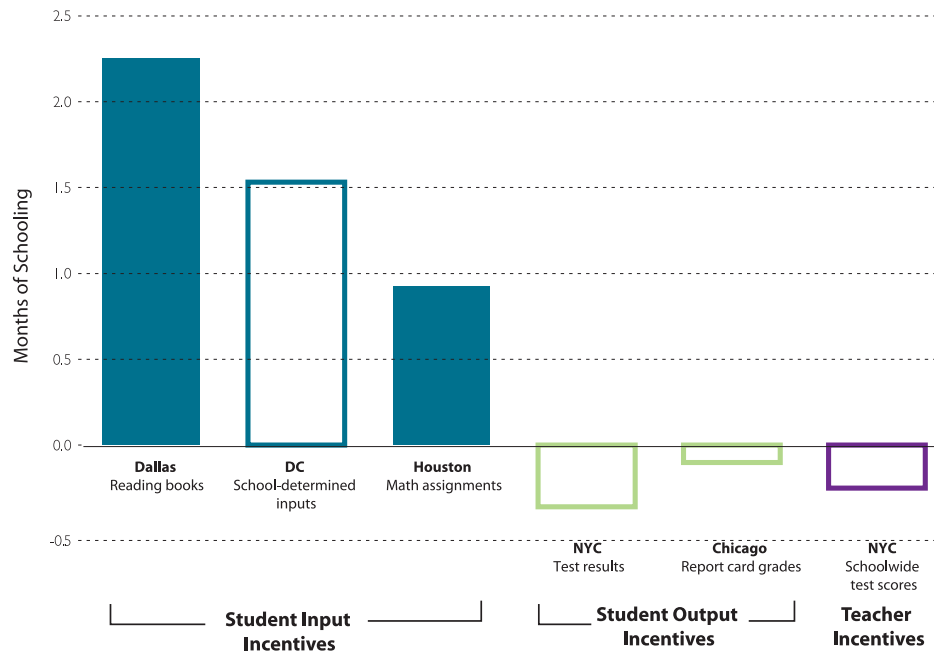
## A New Approach

With the attitude that anything and everything should be tried to help disadvantaged students learn the skills that could help bring them out of poverty, Brad Allan of EdLabs and Roland Fryer of Harvard University and EdLabs experimented with financial incentives for students, teachers, and parents in five cities across America and in schools with a high proportion of economically disadvantaged students. Drawing on the results of these experiments, they offer the following 10 Dos and Don'ts of Education Incentives:

- 1. DO provide incentives for inputs, not outputs:** Experiments showed that when students were paid for grades or test achievement, there was no improvement. As the figure on the following page demonstrates, incentives for inputs such as reading and math assignments were much more effective than incentives for outputs or teacher incentives. Conversations with students and parents suggested that students wanted to improve but they did not know how. Students often tried to change their test-taking strategies rather than studying harder, and the initial excitement about the program faded when they saw that their grades were not improving. On the other hand, when students were paid to read books or do math homework, they read the books and found that their test scores also improved.
- 2. DO think carefully about what to incentivize:** Although students were excited about the incentive programs, this excitement did not translate into enthusiasm for other aspects of school. Students did exactly what they were incentivized to do and no more. If they were paid for reading books, they read books. Only in cases where doing these tasks helped them learn tested material did they show gains. The two input incentives that were effective were paying to read books and paying students to work on math problems designed to focus on individual problem areas. Paying for general homework completion and behavioral incentives did not lead to higher achievement even though students generally responded to the incentives. This suggests teachers and parents need to think carefully about what activities do lead to achievement gains and incentivize those actions.
- 3. DO align incentives:** A student may have a hard time improving her grades on her own if her parents and teachers are not similarly motivated. Incentives for teachers, parents, and students should complement each other, and progress is easier when two or even all three groups work together. One of the most successful incentive programs was in Houston where teachers, parents, and children were all paid for different roles in making sure kids did their math homework.

FIGURE 1

## Impact of Incentive Programs on Student Achievement



Notes: Solid bars represent impacts that are extremely unlikely to have occurred through chance. These results are statistically significant at the 10% level. Results are impacts on standardized tests, averaged over subjects and grade levels where applicable. See Fryer (forthcoming) for further details.

Source: Roland Fryer, "Financial Incentives and Student Achievement: Evidence from Randomized Trials," *Quarterly Journal of Economics* (forthcoming) and data from the authors.

4. **DON'T think the effects go away immediately after the incentives are removed:** Contrary to many prominent views that students will suffer negative achievement after incentives cease, results from the Dallas experiment indicate a 'fade-out' effect similar to what has been documented in other successful education interventions. However, some evidence suggests that these interventions can have positive long-term effects (such as higher earnings) even when test gains fade.
5. **DON'T believe that all education incentives destroy intrinsic motivation:** Some oppose the idea of incentives because they think it will undermine students' love of learning. In response, Fryer and Allan surveyed students about their interest and enjoyment while participating in certain activities like doing homework, and they report that there was no significant difference between those students offered incentives and those who were not.
6. **DON'T worry that students waste the money they earn:** In all the experiments, incentive programs were paired with financial literacy education and assistance in setting up bank accounts. Students who were offered incentives increased their savings and actually spent less in categories like entertainment and clothing. Knowing that students may save much of their reward money might make the idea of an incentive program more appealing to school districts, but in the end, if the programs increase student achievement, the way in which students spend their money does not matter.
7. **DO implement what works:** The most effective programs may run counter to intuition. Educators should implement what has been proven effective, and variations on programs should be piloted and rigorously evaluated before being implemented on a large scale. Even small changes in incentive design or a change in the targeted student population can make an effective program ineffective or vice versa.
8. **DO stay the course:** Public opinion of incentives is not generally positive but Allan and Fryer argue that this should not deter educators from utilizing incentives. Conventional wisdom in educational reform in the past few decades has not produced results, and new approaches are necessary. The evidence that incentives do not undermine students' enjoyment of learning should also allay some of these concerns.
9. **DON'T be cheap:** Students are highly price sensitive and will likely respond to increased incentives with increased effort. Students that were paid double for completing math assignments completed almost twice the number of those assignments. Schools may have other constraints that restrict the amount of funding that they can devote to

incentives, but concerns about diminishing effects of more money within the current scope of incentive programs should not be a concern.

#### **10. DON'T believe the hype—incentives are not a panacea:**

The impact of incentives is not large enough to bring about fundamental change in the educational system, but they provide a large return on a relatively small investment. Well-targeted incentives may be a part of a larger solution.

### **Implementing Incentive Programs**

Allan and Fryer have created a guide for schools and districts that may want to implement incentive programs (see sidebar). Incentive programs provide some advantages over other types of educational reforms, as they can be developed and implemented by individual schools or districts, and they can be layered on top of existing systems without too much disruption. This way, there is room for each school system to decide what type of incentives are best for them, and no additional state-level or national infrastructure is needed.

Furthermore, the administrative costs are low allowing a large portion of the total program costs to be dedicated to actual incentives. Because of all these advantages and because there are currently very few student incentive programs, moving some resources to these interventions could provide large returns.

Schools should engage with students and parents as the program is being launched to ensure awareness and understanding of the programs. Certificates and assemblies for public recognition of achievement also build a culture of accomplishments that reinforces the effects of the incentives.

Key elements of incentive programs should be well-defined before the programs go into effect. These include structures of communication and responsibility, payment calculation and distribution, and data reporting and monitoring.

### **Costs and Benefits**

The costs of the incentive programs ranged from \$44 to \$1200 per pupil with large portions of this money actually being disbursed directly to students. Furthermore, incentive programs are relatively easy to implement, so they do not significantly disrupt existing systems.

The benefits from incentive schemes that have been shown to work are sizeable. In Dallas, students were paid \$2 for each book that they read. Reading comprehension scores

## **Implementation Roadmap**

Drawing on their experience working with schools, the authors present five guidelines for successful implementation.

1. **Informing subjects:** If students and parents do not understand the structure of the incentive programs, then the incentives do not serve their purpose of providing motivation. Programs should be introduced with easily digestible materials and community forums, and schools can check student understanding of the program using quizzes.
2. **Structures of communication and responsibility:** Building an incentive program requires hiring and empowering a district-based management team to ensure fidelity to the program and to coordinate closely with individual schools, other administrative staff, and third-party vendors.
3. **Payment calculation and distribution:** Each program will have to have a different payment protocol that is suitable for its school system.
4. **Data reporting and monitoring:** Gathering data carefully and regularly is necessary to run the programs efficiently. The data also help identify students who are struggling in class so that they can be targeted for more assistance.
5. **Building a culture of success:** The last critical component of any incentive program is to build a culture of success by publicly recognizing and rewarding students for their achievements. This can be accomplished with certificates and reward assemblies that provide a regular reminder about the program and about the student's progress. A healthy spirit of competition can also add to the power of the programs.

## Learn More About This Proposal

This policy brief is based on The Hamilton Project discussion paper, “The Power and Pitfalls of Education Incentives,” which was authored by:

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## Additional Hamilton Project Proposals

### Organizing Schools to Improve Student Achievement: Start Times, Grade Configurations, and Teacher Assignments

Education reform debates often center on expensive, politically controversial, and dramatic changes in policy. This has obscured an important direction for raising student performance — namely, reforms to school management and organization that make sure the “trains run on time” and improve administrative decisions that affect the instructional process. Such reforms may substantially increase student learning at modest cost. The paper discusses three reforms that evidence suggests have highly favorable benefit-cost ratios: later start times for older students, restructuring the stand-alone middle school, and ensuring teachers are assigned the grades and subjects in which they are most effective.

### New Assessments for Improved Accountability

Although assessments are needed to hold schools and teachers accountable for student performance, the current assessment system is flawed. Today’s tests have not been designed for use in accountability systems. Modern assessments are constructed to be similar from year to year which makes teaching to specific tests far easier. This leads to gains on certain tests without real improvements in learning, and class time may be spent on test-specific coaching instead of on teaching content. A new accountability system can address these issues if it uses an innovative assessment that is not as predictable in combination with non-test metrics such as classroom observations, school inspections, and parental evaluations to rank teachers and schools on their effectiveness.

improved by 0.18 standard deviations, roughly the equivalent of attending an extra 2.3 months of school. Similarly, in Houston, students, parents and teachers were all given incentives that encouraged student mastery of math concepts in the form of tailored assignments. Students in the program completed 125 percent more assignments and gained 0.074 standard deviations on their math tests, or roughly 0.93 months of extra schooling.

## Conclusion

Well-designed student incentive programs provide a promising new approach to boost student achievement. Although student incentives are no panacea for every challenge facing schools, the programs promise high returns at relatively low costs, and they can be easily tailored to and implemented by individual schools and districts.

Allan and Fryer draw on their experience creating and evaluating incentive programs in schools around the country to provide a road forward for schools that wish to adopt programs. They have learned that incentives based on inputs are more effective than incentives based on outputs. Although more work is needed to learn more about the best way to structure incentives, especially for teachers, we cannot afford to ignore the potential of incentive programs going forward.

## Future Directions:

### What remains to be researched on incentives?

- **Provide incentives for students or teachers to try new strategies:** There are a great deal of ideas related to incentives that remain to be tried, such as incentivizing teachers and students to use technology in the classroom or at home or encouraging teachers to use certain instructional tools. These experiments can also provide broader insight into what students, teachers, and parents will respond to and what behaviors actually boost achievement.
- **Try varying the incentives:** For some incentives, increasing the reward may increase effort equally but for others there may be an optimal reward level. Varying the reward every few weeks may also make the program more exciting and keep kids interested.
- **Try nonfinancial incentives, especially for teachers:** Nonfinancial incentives are still being tested for students. Programs that give students mobile phone minutes instead of money cut down on transaction costs. Students may also be more motivated by nonfinancial rewards if they enjoy awards such as pizza parties or phone minutes more than they would enjoy the same amount of money. Other types of incentives may also be useful as some schools pilot teacher performance pay systems.
- **Do more with parents:** Parents were only incentivized in Houston as a part of the aligned incentives for parents, students, and teachers. Schools and districts should experiment with parental incentives more.

## Highlights

Brad Allan of EdLabs and Roland Fryer of Harvard University and EdLabs propose a series of best practices for schools that wish to implement student incentive programs to boost student achievement using financial and nonfinancial rewards for behaviors that increase learning.

## The Proposal

### **Student incentives based on goals that have been proven effective.**

Experiments with student incentives have shown that students respond well to incentives, and that incentives based on inputs such as reading books or doing homework are more effective than incentives based on outputs such as test scores or grades.

**Programs tailored to and implemented by individual schools and districts.** Student incentive programs are most effectively implemented on a local level, by teams working within districts or even schools. In this way, schools can find the incentives that work best for them, and no larger new infrastructure is needed.

### **Promising new directions for even larger benefits.**

Early results show that incentives may be even more effective when students, parents, and teacher are all encouraged to work together toward the same goal. There remain many exciting approaches to incentives that have not yet been explored.

## Benefits

Widespread implementation of incentive programs can boost student achievement where they are needed most, especially among disadvantaged students where many interventions have been tried and have failed. Incentives are not a panacea, but they could play a significant role in the larger solution.



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