

WHEN ALL THE QUICK FIXES FAIL AGAIN, TRY R&D

Robert K. Branson*

Religious groups, businessmen, politicians, presidents, and assorted zealots urge new and amazing policies and “reforms” on public education every year. Some of these policy fads are enacted into law by legislatures who fully expect them to work. The result of these frequent policy changes is that school performance does not get better; fortunately it does not get worse either.

The purpose of this presentation is to compare the education system to those of the healthcare industry and the agricultural community to see if there are lessons they have learned that might profit education.

The conclusion to be presented and defended is that education cannot get better until it uses the results of programmatic research and development (R&D) to make incremental changes in the current processes. Educators cannot avoid the difficult and deliberate R&D work that other industries must do to make fundamental improvements.

THE UPPER LIMIT HYPOTHESIS

Why does educational performance in the United States not improve year after year? After all, other sectors of society create improvements and continue to strive for new ways of approaching problems. I suppose the answer depends on whom you believe.

I believe Herrington (1995) and Hanushek (1994, 1997) who tell us that dramatic increases have been made in education funding. That these funding increases have been substantial seems to be generally accepted in the education policy community. However, few measurable improvements have been reasonably attributed to this increased funding. Lack of money is not the single problem.

To understand why funding increases have resulted in little improvement, we turn to C. S. Smith (1981) at Massachusetts Institute of Technology, who plotted the life cycles of many technologies. We believed that these same general life cycles applied to school operations (Branson, 1987, 1998). We concluded that the current *teaching-centered* model of schooling, which dominates American education, has reached the *upper limit of its potential capability*. Through dedication and years of hard work, the teachers and principals have obtained from this technology system about all it will yield.

Maybe performance is improving, but two strong public school champions published data demonstrating that performance has not improved during the past

*Center for Performance Technology, Florida State University
 25 years. Berliner and Biddle (1995) provided compelling evidence supporting the upper limit hypothesis. They concluded that student performance had remained unchanged for the previous 20 years. In his annual reports to Kappan, an educator's magazine that defends the interests of public schools, Bracey (1991, 1997) reported data generally congruent with Berliner and Biddle. In a keenly dramatic conclusion, Bracey (1991) said, "The lines on a graph of average student performance are as flat as the surface of a frozen lake. Nowhere is there any evidence of a decline" (p.109). The upper limit, or asymptote, is the point of diminishing returns. American education reached that point somewhere between 1950 and 1960.

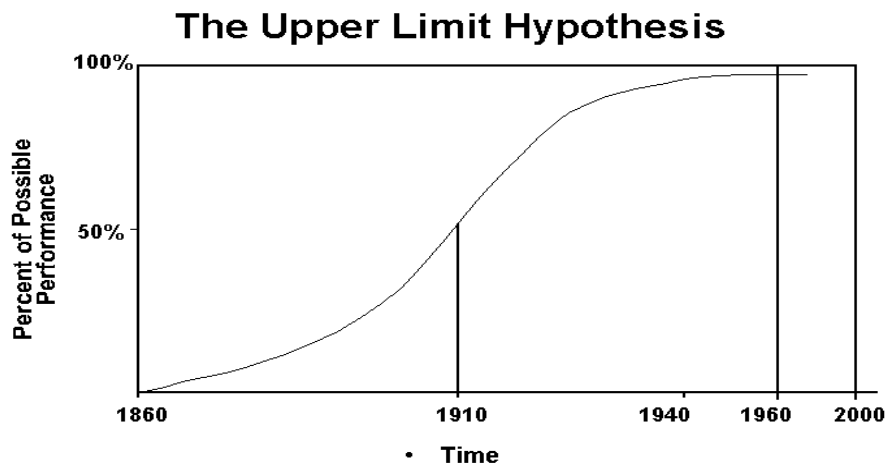


Figure 1. The hypothetical upper limit of performance in the teaching-centered model of schooling.

(After C. S. Smith, 1981)

Based on these research findings and analyses, we concluded that additional funding in and of itself is not a credible answer. We tried that. When we look at other well-used performances and technologies, we realize that they all have upper limits of design capability. Each of us will one day run or swim as fast as we ever will. Without a change in the operating system, our computers were limited to 640K of memory; without research in data transmission technology, we were stuck with a 300-baud modem; until the invention of antibiotics, there were few treatments for infection.

If the upper limit hypothesis is correct, and I believe that the evidence strongly supports that view, then traditional fixes, including more teachers and more money, cannot make significant improvements.

CAN ANYTHING BE DONE?

Remember that major advances in other sectors of society—medicine, agriculture, computing, and aviation— for example, were all preceded by a substantial investment in R&D. Some available educational research is of sufficient quality

to contribute to improved educational processes. However, the research findings that appear to have the most promise are neither widely nor well implemented (see Berliner & Casanova, 1993).

To make significant progress in education, as penicillin did in medicine, will require three major changes:

Fundamental redesign in schooling from the predominant teaching-centered model to a learning-centered model. Current school organization was established long before there was a science of learning and motivation.

Major investment in the research and development of products and processes for schooling to make capable systems available. This research should be conducted by research institutes at the state level, much like the infrastructure for agricultural research or medical research.

Cultural change within education to create demand for new products and processes based on R&D.

Every sector of society in which major gains have been made has had to go through this process. When it comes to education, politicians, parents, and policy makers all seem to believe that schooling will somehow escape the difficult, deliberate, and persistent R&D evolution that everyone else has to do. Before and after every election one hears about new schemes that simply offer more or less of the same processes that already do as well as they will ever do.

Virtually all of contemporary and historical educational research has assumed the constancy of the teaching-centered model. Perhaps because of education stakeholders, these groups share a common and vivid mental model of what school is. In other sectors, stakeholders have not all had a common experience that creates a path dependency from the past, but in education, every proposed change requires people to give up their concept about what school ought to be. Scientists had incredible difficulty stamping out the demonic and evil spirit beliefs about the cause of disease, but the germ theory ultimately prevailed in the developed world. Now education has to overcome its demons of the past as well.

As knowledge accumulates, practitioners find it increasingly difficult to be informed in all areas of research. Members of many professions realize that they must specialize or forever remain marginally informed. In most school districts, complex issues are assigned to committees of teachers. This is a fatally flawed problem solving method. It is not that selected teachers are incapable of resolving any issue; it is that they do not have time to review the literature and make well-documented decisions. Yet, many highly influential educators advocate the “teacher as everything” model, including Darling-Hammond (1990).

References

- Berliner, D. C., & Biddle, B. J. (1995). The manufactured crisis: Myths, fraud, and the attack on American public schools. Reading, MA: Addison-Wesley.
- Berliner, D. C., & Casanova, U. (1993). Putting research to work in your school. New York: Scholastic.
- Bracey, G. W. (1991). Why can't they be like we were? Phi Delta Kappan, 73,104-117.
- Bracey, G. W. (1997, October). The Seventh Bracey report on the condition of public education. Phi Delta Kappan, 79, 120-137.
- Branson, R. K. (1987). Why the schools can't improve: The upper limit hypothesis. Journal of Instructional Development, 104, 15-26.
- Branson, R. K. (1998). Teaching-centered schooling has reached its upper limit: It doesn't get any better than this. Current Directions in Psychological Science, 7(4), 126-135.
- Darling-Hammond, L. (1990). Instructional policy into practice: "The power of the bottom over the top." Educational Evaluation and Policy Analysis, 12, 339-347.
- Hanushek, E. A. (1994). Making schools work: Improving performance and controlling costs. Washington, DC: The Brookings Institution.
- Hanushek, E. A. (1997, Winter). Why true reform of schools is so unlikely. Jobs & Capital, 6, 22-27.
- Herrington, C. (1995) The politics of school-level finance data and state policymaking. In L. Picus & J. L. Wattenbarger (Eds.), Where does the money go? Resource allocation in elementary and secondary schools (pp.236-252). Thousand Oaks, CA: Corwin Press.
- Smith, C. S. (1981). A search for structure. Cambridge, MA: MIT Press.