

● 14

It may be that those who do most,
dream most.

Stephen Leacock

Perfection of means and confusion of ends
seems to characterize our age.

Albert Einstein

If at first you don't succeed,
you're running about average.

M.H. Alderson

Some people handle the truth carelessly,
others never touch it at all.

Anon.

All empty souls tend toward extreme opinions.

William Butler Yeats

Education cannot be substituted for intelligence.

Gerald H. Grosso

Much more is known than is actually true.

J. R. Pierce ('50s and '60s Bell Labs worker)



Education: The often mis-firing magic weapon

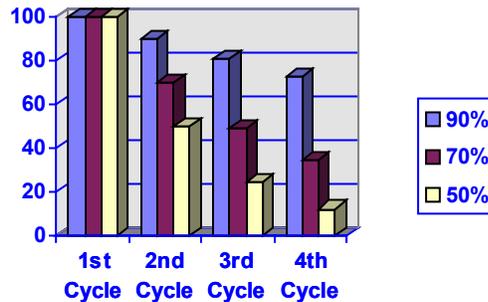
Every nation, whether large or small, *has the ability to transform itself into a new future through the influence and impact of education.* This is a social force of incredible power, literally a magic force that can change cultures and alter the path of history yet to come. For the most part, we waste it on the memorization of city names and multiplication rules, and see it as an opportunity to grade and categorize the nation's young for our later casual convenience.

When we educate ourselves, we pass on our understanding of the world, largely as it is now, and subject to our individual talents and vision. Usually we teach *what*, and not why, since the *why* may be more difficult to explain, locally controversial, and less convenient to grade. History has become only the recital of dates and players, not the *reasons* for war or exploration. Math the boring subject that involves trains racing toward each other for the greater glory of word problems, rather than being the analytical key to the universe. We have also

There is *no escape from each other in the world*, we will all suffer if we accept marginal education as satisfactory. Who will visit a doctor or car mechanic with 50% competence? *There is no job that is so irrelevant in the world that it can be done poorly. It's worth remembering that we are all sitting in a very small boat, and none of us is untouched by the actions of the others.*

It is critically important to understand that the concept of 50% competence has within it a dangerous flaw that is largely to blame for many problems in North America. This is simply that the 50% level is *50% of what the teacher knows*, which may in fact, be far less than 100% mastery of a given subject. This decreasing competence spirals downward at a fantastic rate, once it is accepted as a workable method.

A comparison of the results of competence transfer rates



After 4 generational cycles,
the 90% group still has 72.9% competence
The 70% group has only 34.3%,
but the 50% group has only 12.5%

While this is a highly simplistic model, I have to consider that this point needs to get through to many people that may be at an unattractive point on this graph, so some simplicity is called for. The inescapable fact is that to get good results, you need good standards, which get *regular outside review and independent test to stay good*. This is just like calibrating an electronic meter, the use of regular external standard checking is essential to maintain viable and accurate systems.

This is understood in the manufacture of almost everything, is the cornerstone of all calibration, measurement science and metrology world-wide, but is *completely ignored* in education to our extreme detriment.

The concept of grading needs a massive overhaul both with regard to function and delivery. *The goal of education must be to impart the best knowledge and understanding we can achieve to every student.* They will be our future, like it or not, and the work product of society that we will all be judged on in years to

come. We **cannot accept** mediocrity and marginal competence as a routine outcome of this process. We need to challenge them with problems that will ignite their interest, and that will address issues in every community that need solving.

For many skills, **competence is 100% understanding**, such as basic math. Is math skill without knowledge of 5's and 3's 80% competence, and should that get a "B" grade? Hardly. Many skills have **threshold competence that must be achieved**, and to have less is to have **nothing** in practice.

The concept of "curve grading", which is a gross misapplication and totally false understanding of statistical distribution, should be completely abandoned. The idea that there can **only** be so many "A" grades, so many "B" grades, that most must be "C" grades, and that some must fail in a given class is completely wrong. There is no reason why interested students and a dedicated teacher cannot achieve **all "A" grades or 100% competence** for an entire class. In fact, that **must become the goal** of all education, to find out how to interest and educate young students to become fully competent in as wide a range of areas as possible.

Grades serve only one purpose, to illustrate what has been absorbed, and what still needs improvement. Grades are a flag to students, teachers and parents that time has been well spent, or that more needs to be done. They are not really suitable as sorting devices to classify children as stupid, bright or gifted. In different circumstances, all these roles may be reversed or altered. Low grades most often indicate that a student was not motivated, did not have the right foundation material before the class, or that they did not respond to a given teacher or class situation. Students must be made to understand the seriousness of their lack of attention and interest. A different setting should be tried, to improve that condition, and combined with the help of other students that understand the material and can convey that understanding.

A better grading system should take into account threshold skill levels, and reflect their mastery in a system that is more like many university settings: pass/fail/pass with distinction. Students & parents **must** take more responsibility for these skills, and realize that they cannot be passive players in their education, but must be involved and committed. Students that are disruptive, indifferent or unmotivated need to be placed in other settings, possibly not classrooms, where their behavior won't compromise other students, and where they may find something that **will** motivate them.

Our educational system must also incorporate challenges that cannot be solved by a single individual, but require students **to plan and work together** to achieve a goal. Teams, groups, classes, whole schools and whole cities may look for ways to involve their students in the solution of some problem or situation that affects them all, and needs to be fixed. There is no reason why students should not

Historically, people could learn a skill, and have some confidence that it would have value for them, and be in demand after their education was completed. This is ***no longer true in any field***, and the more common pattern that has emerged is that all education other than very basic skills is already ***deteriorating in value*** by the time it is introduced into schools.

Many things are now taught that are already displaced or made obsolete, which demoralizes students and teachers alike, and fails to satisfy the needs of the community at large. Only more interactive contact with industry and education can possibly change this pattern, and extraordinary difficulties will remain in some areas where basic tools and science are changing almost monthly.

At the same time, many things of lasting value and deep cultural importance such as literature, philosophy, history, art and mathematics ***are being ignored as irrelevant***. This combination is extremely dangerous on a societal level, and will shortly result in a new population with only the shallowest understanding of their circumstances, and no useful insight into their future.

It is also critical to understand that while ***the general society may see itself as mature or knowledgeable in some area***, and understands that it is shaped by the observing of important current events, ***this is totally lost on every new child that is born. The greatest failing of education is that it has yet to successfully impart the consciousness of current culture to new members.*** Every child has to start at zero, and run desperately to assimilate what those around him or her already know comfortably. This is a very imperfect process, and leads us over and over to the same mistakes on both the big and small scale. ***This is really the critical achievement required by the human race if it is to ever genuinely improve its state.***

No government can survive an ignorant population for long, especially one that depends on the decision making skills of its citizens, such as any representational form of government. The inevitable social outcome of bad education is dangerous social bias, repressive and totalitarian governments, and the loss of individual rights and freedoms. On a business level, it is low productivity, uncompetitive industry and a deteriorating economy. Slow and painful death by any other definition. ***No binding force is more critical than good education to a society, but very few use this tool well or with any detectable grace.***

It is a telling indication of far we have fallen in our quality of education that we regard teachers and their skills poorly, and a far worse situation, that some clearly deserve that assessment.

If I had a magic wand, I would use the incredible power of the movie industry to illustrate and teach history, and the causality of our situation. It could be an extraordinary tool to convey in much more vivid and memorable fashion the key

