Re: education

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From: Herman Rubin (*hrubin_at_odds.stat.purdue.edu*)
Date: 09/28/04

Date: 28 Sep 2004 11:07:02 −0500

In article <41588325$1_5@newsfeed.slurp.net>,
Will Twentyman <wtwentyman@read.my.sig> wrote:
>Tron99 wrote:

>> Will Twentyman <wtwentyman@read.my.sig> wrote in message
news:<4151dd37_2@newsfeed.slurp.net>...

>>>What level are you talking about? Some of your comments may apply well
>>>to a grad student, but very poorly to a high school student.

>> My comments apply to some grade in elementary school and above
>> including high school, college, and graduate school. Teachers in the
>> majority are not qualified to teach math and/or the sciences, and I
>> mean the vast majority.

>Based on this one statement, I have to question everything else. What
>do you mean by qualified? If you mean having adequate mathematical
>knowledge, then the elementary school teachers could be questionable.

Not only the elementary school teachers, but the high school
teachers, and unfortunately, even many of the college teachers.

Memorizing facts and doing routine calculations is not at all
conducive to understanding any subject.

>On the other hand, if you mean having adequate teaching skills, the
>elementary teachers should be fine.

Wrong. The "teaching skills" which they are supposed to have
are on how to teach facts and routine procedures, and to
encourage hard work, necessary or not. Their assignments
are of the routine or busy work nature, and much of the grade
is often based on effort, not learning.

I know many college teachers who are supposedly good
teachers, but the students they have almost need to start
over to learn anything fundamental.

> > Like you say below, you can't be an expert in
>> all areas of math, but the teacher is certainly not an expert in all
>> areas, but they teach math at the lower grades and even college
>> without an expert qualification.

>Again, what do you mean by "expert qualification"? Most colleges
>require the teacher of record to have at least a Master's degree, and a
>Doctorate for teaching graduate students.

At this time, I regret that I cannot accept a degree as more
than a suggestion of competence, and often not even that.

> > I think that math is given 60
>> minutes a day in elementary school, and I know in high school I had
>> only one math class in any one semester. Students in the majority are
>> going to come to college with deficiencies in math in all areas
>> because of this.

>I got through two semesters of calculus in high school. Is that
>deficient? What is?

The amount of time is quite adequate for those who can ever
achieve the equivalent of at least a strong BA in mathematics
to achieve it by the time high school is completed. But it
is not mathematics which is taught, but facts and formulas
and routine procedures. This includes high school calculus
in most cases.

> > The solution is to remove the traditional teacher
>> and have online materials and books.

This is PART of the solution, not the whole thing. The
online materials do not exist.

Students can be lectured at if
>> they feel the need by experts in the field they are studying from the
>> earliest age, and be lectured at through videos.

This is probably the case. Lectures for presentation of
material are important only when there are not good
written materials available, or other means. The ideas,
however, are rarely presented. If we are to have classes,
they should generally be electronic classes, not lectures.
There is no reason why the students and professor need to
be in the same room.

I wouldn't put it
>> past having an online mentor who can assist students who have
>> questions, and I'm sure there would be people who would want to help
>> the students, especially elderly people who have retired from their
>> research careers.

Even people who are currently active are willing to do this.

>You appear to have an inflated view of the value of the online materials
>that are available, at least from what I've seen. For example, I
>wouldn't expect most 1st graders to learn arithmatic on sci.math.

Sci.math makes no effort to teach arithmetic (or any other part of mathematics) at this time. Also, teaching arithmetic as it is usually done seems to have a negative effect on the ability to learn mathematical concepts, as was seen by the failure of the teachers, not the children, to be able to learn the "new math".

Arithmetic ability is a useful TOOL, and not at all basic. Being able to understand variables in full generality, for which the materials are not yet available but could be made so quickly, is the mathematical equivalent of basic language.

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>Wouldn't it be easier to redefine peers as something based on aptitude
>with a subject rather than age?

Anyone who defines peers according to age is opposed to real education in any subject.

> > Similarly
>> there will be students who will be behind his peers, and they can
>> query people at their level or above. Remember, teachers are not
>> qualified to teach math in the majority.

>Yet you feel that fellow students are consistently better qualified?

No. It requires an understanding of mathematical logic, axiomatic systems, and proofs, as well as the concepts involved, to be able to do a good job of teaching. Being able to do the proofs is not enough, and even having an intuitive understanding may not be enough. You have to have the ability to realize that not all have your abilities, and to be able to adjust your communication, to teach.

A student who knows procedures can communicate this, as well as facts. Whether the communication is adequate or not is a major problem, and it is often the fault of the student who does not wish to understand, but only to be told "how".

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>This comment shows complete disrespect for the teacher. What if the
>teacher doesn't want to do research? What if a teacher is ideally
>qualified (by whatever standards you have in mind) to teach, and wants

>to do absolutely no research? Being good at research doesn't make a
>person a good teacher.

No, but not understanding and appreciating research and concepts
will make a person a bad teacher. We need teachers who cannot
do research, but not those who will just teach facts and formulas.

When you get a student who knows the facts and formulas well, how
are you going to get through to that student that these are not
at all the basics, and it is necessary to start over?

> > I claim that without
>> sufficient time to research, that teachers skills will gradually
>> degrade over time and there will be a tendency towards "standardized"
>> teaching and rote learning, because the teacher needs to actively work
>> on his own math skills to retain what he has already learned.

>There is a difference between doing research and staying on top of
>skills learned.

It is not skills completely, but also concepts. Again, I have known
supposedly outstanding teachers who have concentrated on teaching
facts and skills, and making it hard to learn the ideas.

>> What will happen is that a student will be able to read from a
>> rated book or instruction material so that he can be pretty sure that
>> the direction that he is going has been approved by those before him.

This would be much better than what is now the case. The results
when coaches taught "Euclid" were not that bad; the emphasis on
theorems and proofs got across, even if the teachers had to use
their manuals to grade the problems. Less than 10% of the students
now get any of this.

>I suspect you haven't looked at the options that actually exist. I
>definitely don't know what your standards are, but they appear to have
>little to do with educational theory, or an awareness of some of the
>realities we face.

I am quite aware of what passes as "educational theory"; it is
mainly Marxian philosophy and misuse of statistics. I know
their arguments, and reject just about all of them.

It is the educational theorists who cursed more than a generation
of students with the whole word method, making many of them unable
to make good use of the alphabet. It is educational theorists in
the NSF who downplayed the excellent geometry book produced by the
SMSG panel, and insisted that they put in an alternate book, which
is the "recommended" one, which ties it in with algebra and
numerical computations. It is the educational theorists who made
the big push for "objective" tests, which cannot test important

objectives.

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This address is for information only. I do not claim that these views
are those of the Statistics Department or of Purdue University.
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