The Land of Meaning, The Dock of Ignorance: A Case Study

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Abstract

This paper examines the student work of a class of graduate students in educational administration who were taking a graduate course in school finance. The purpose of this study is to use this analysis of student work to both guide instruction and direct policy. The student work is real. However, both the students and the college they attended have been disguised for their privacy and protection.

Introduction

When I first became a public-school administrator, I was assigned a mentor, an older gentleman who had started his career as an English teacher before becoming an administrator. This mentorhad a penchant for speaking metaphorically. For example, when a student or colleague was obviously having trouble grasping a concept, he would say something like:

I'm sorry to say that the boat for the *Land of Meaning* has set sail and left you still standing on the *Dock of Ignorance*.

This is a case study: qualitative research. So, no random samples, correlation coefficients, and so on. In fact, for me it is the special nature of the subjects involved in the study that makes the study so intriguing. All the participants are highly educated adults. All have at least a master'sdegree. All work in New York public or private schools in some capacity, most as teachers, but some with administrative duties. All are aspiring New York public school administrators enrolled in a degree program leading to certification as a School Building Leader and/or School District Leader. All were wrestling with the subject known as *School Finance*with me as their professor.

What follows is an examination of these students' work with the idea that student assessment data can help us understand what is going on the students' minds as they attempt to master and apply the material. Then, in turn, that assessment data may be used to guide instruction and direct policy. The text for the course was *Financing Education in a Climate of Change 12/E*, by Vern R. Brimley, Jr., Brigham Young University, Deborah A. Verstegen, University of Nevada, Renoand Rulon R. Garfield, Brigham Young University, and published by Pearson in 2016.The readings from the text were supplemented with various other materials. Although the text comes with its own assessments, I supplemented those assessments with assessments of my own, most notably seven *Power Point* presentations for which students simulated having to develop presentations for school board meetings at which they explained issues related to school finance. These issues included such concepts as assessed value versus fair market value, the state equalization rate, tax rates, full local funding versus foundation programs, STAR credit, as well as issues related to developing and managing a school budget.

It is the student work from one of these *PowerPoint* assignments that we will take an extended look at. However, as we review their student work, I'll be very surprised if you are not tempted, as I was, to use my old mentor's phrase:

> Class, I'm sorry to say that, as far as the mathematics part of school finance is concerned, it seems that the boat for the *Land of Meaning* has set sail and left you still standing on the *Dock of Ignorance*.

The Task

Foundation Programs

Like thirty-six other states, New York State uses a variation of the foundation program approach for funding education. In theory, the foundation program approach is both simple and equitable.

It is simple in that it represents shared funding between the State and the local districts: what a local district cannot afford through property taxes alone will be provided by the state. It is equitable in the sense that every student is entitled to the same basic foundation amount of per pupil expenditure and every tax payer pays the same rate of property tax (Brimley, et. al., 2016, p. 134-156). In practice, New York's foundation program system for school funding is neither simple nor equitable. So great are the inequities in school funding that in 2007, New York State's highest court in *Campaign for Fiscal Equity, Inc. v. State of New York* ruled, after nearly 13 years of litigation, that the existing state funding system was unconstitutional and ordered far-reaching reforms to get more money for New York City schools as well as a number of high needs local districts (Rebell, 2011).

In 1993, the Campaign for Fiscal Equity, Inc. (CFE), which included most of New York City's education advocacy organizations, parent organizations, and about half of the city's community school boards, filed a constitutional challenge to New York State's school funding system alleging that the system underfunded New York City's public schools and denied its students the constitutional right to the opportunity for a sound basic education. The litigation was not terminated until November of 2006.

The CFE victory was hailed by those of us who actively supported the move to get more funding for high needs schools and did in fact bring significant funding increases for a few years. However, the Great Recession of 2008 and 2009 brought an end to much of the short-lived windfall for schools so that by 2011, funding for high needs schools was approximately 30% below what had been ordered as necessary in 2007 to meet the constitutionally mandated right of all students to a strong basic education (Rebell, 2011, p 7).

As for the notion of simplicity, the trial court stated: "The evidence demonstrates that the State aid distribution system is unnecessarily complex and opaque. It is purportedly based on an array of often conflicting formulas and grant categories that are understood by only a handful of people in State government. Even the State Commissioner of Education testified that he does not understand fully how the formulas interact." It was later revealed that there were approximately thirty separate funding streams comprising the state aid system (Rebell, 2011, p.9).

Of course, each state is responsible for developing its own funding system and when writing a textbook on school finance or developing assessments to accompany that text, there is no particular reason to single out New York's system for either exposition or scrutiny. However, this course was being taught in New York for New Yorkers. Because the foundation approach for school funding is central to New York State school finance, it seemed entirely appropriate to make the foundation program approach, with both its benefits and its pitfalls, central to the course as well. Illustrative of the philosophy is the Week #8 assignment for the course discussed in the next section.

Quiz #8 Part 3

Over the course of the semester, in addition to other work, students had to prepare seven *PowerPoint* presentations that simulated presentations for school board meetings. In the process they explained, as noted above, a number of issues related to school finance including such concepts as assessed value versus fair market value, the state equalization rate, tax rates, full local funding versus foundation programs, STAR credit, as well as issues related to developing and managing a school budget.

As part of the eighth weekly assignment for the course, students were given the following hypothetical scenario:

> The CFT ─ Commission on Fiscal Transparency─is back complaining that your last presentation doesn't show the people what their total property taxes will be as a result of the 10% cuts in state aid, and, more importantly, if their taxes will go up more than 2%, the State cap on property tax increases. You'll need to answer these questions ASAP.
>
> In your previous presentation, you already calculated that your district will lose $5,848,117.98 in state aid. You also figured the increase in your tax rate to be .21131411% of full market value so that the increase in taxes for the average household is .21131411% x $375,000 = $792.43
>
> **Your task:** Your job is to build on your prior work and expand your previous *PowerPoint* presentations to answer the questions posed by the CFT.

Be sure to show how to calculate

1. The total property tax for the average home in your district.
2. The % increase in the total property tax for the average home in your district.

Then decide if your % increase in the total property tax is above the 2% limit.

HINT: You should use the *PPT* called Quiz #8.template to understand this part. Go through it slide by slide using pencil, paper and a calculator. Then go back and fill in the question marks on the slides and send me the results as **Quiz #8 Part 3.**

THE QUIZ #8.TEMPLATE
AND
THE QUIZ #8 ANSWER KEY

THE QUIZ #8.TEMPLATE
Slide #1

Understanding the Reduction of State Aid

by Dr. James E. Carstens
Consultant for Business

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THE QUIZ #8.TEMPLATE
Slide #2

Our Three Sources of Revenue before the 10% Cut in State Aid

Source	Amount	Percent
Local Contribution	$44,494,020.00	40.62%
State Contribution	$58,481,179.81	53.38%
Federal Contribution	$6,572,885.09	6%
Total Budget	**$109,584,084.90**	**100%**

5/5/2018 DRAFT 2

THE QUIZ #8.TEMPLATE

Slide #3

Our Three Sources of Revenue with the 10% Cut in State Aid

Source	Amount	Percent
Local Contribution	$50,342,137.98	45.94%
State Contribution	$52,633,061.83	48.03%
Federal Contribution	$6,572,885.09	6%
Total Budget	**$109,584,084.90**	**100%**

5/5/2018 DRAFT 3

THE QUIZ #8.TEMPLATE

Slide #4

The New True Tax Rate with the 10% Cut in State Aid based on Fair Market Value

Tax Rate (FMV) = Local Contribution ÷ Total Value of Homes

= $50,342,137.98 ÷ $2,767,500,000

=

ANSWER KEY

Slide #4

The New True Tax Rate with the 10% Cut in State Aid based on Fair Market Value

Tax Rate (FMV) = Local Contribution ÷ Total Value of Homes

= $50,342,137.98 ÷ $2,767,500,000

= .01819

THE QUIZ #8.TEMPLATE

Slide #5

The New Tax Rate (AV) with the 10% Cut in State Aid based on Assessed Valuation

Tax Rate (AV) = True Tax Rate (FMV) x 75

=

=

=

Remember: 1/75 is the State Equalization Rate

ANSWER KEY

Slide #5

The New Tax Rate (AV) with the 10% Cut in State Aid based on Assessed Valuation

Tax Rate (AV) = True Tax Rate (FMV) x 75

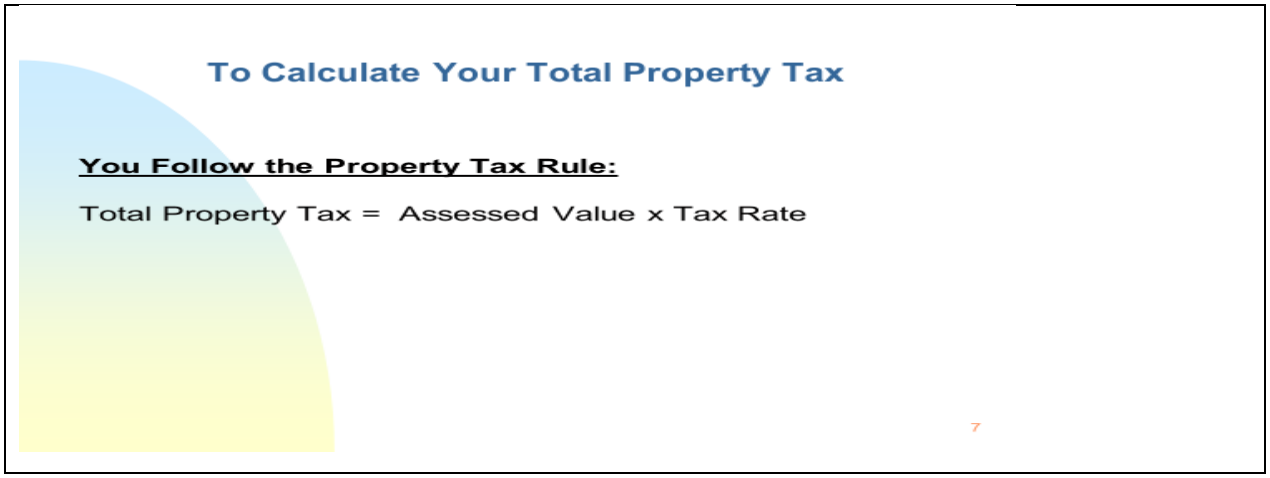
=.01819 x75

=1.36425

=$1.36425/$100

Remember: 1/75 is the State Equalization Rate

THE QUIZ #8.TEMPLATE
Slide #6



THE QUIZ #8.TEMPLATE
Slide #7
Before the 10% Cut in State Aid
If your home is worth $375,000, thatmeans your home's assessed value is$5000.
Following the rule:
Total Property Tax = Assessed Value x $120.58 / $100
or
Total Property Tax =

ANSWER KEY
Slide #7
Before the 10% Cut in State Aid
If your home is worth $375,000, that means your home's assessed value is $5000.
Following the rule:
Total Property Tax = Assessed Value x $120.58 / $100
or
Total Property Tax =$5000 x $120.58 / $100 =$6029

THE QUIZ #8.TEMPLATE
Slide #8
After the 10% Cut in State Aid
If your home is worth $375,000, that means your home's assessed value is $5000.
Following the rule:
Total Property Tax = Assessed Value x $136.43 / $100
or
Total Property Tax =

ANSWER KEY
Slide #8
After the 10% Cut in State Aid
If your home is worth $375,000, that means your home's assessed value is $5000.
Following the rule:
Total Property Tax = Assessed Value x $136.43 / $100
or
Total Property Tax =$6821.50

THE QUIZ #8.TEMPLATE

ANSWER KEY

Slide #9
The Increase in Property Tax with the 10% Cut in State Aid Increase in Property Tax = Total Property Tax after the 10% Cut - Total Property Tax before the 10% Cut = =

Slide #9
The Increase in Property Tax with the 10% Cut in State Aid Increase in Property Tax = Total Property Tax after the 10% Cut - Total Property Tax before the 10% Cut =$6821.50-$6029 =$792.50

TEMPLATE Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = =

ANSWER KEY Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 = 13.145% **That's far above the 2% cap!**

Notice how the template, **Quiz #8.template**, not only formats the *PowerPoint* presentation for the student, but it also guides the student through the necessary calculations. One might expect that because so much of the work has been done for the student, student success should be almost guaranteed. However, in the next section when we examine student responses, we'll see that those expectations may have to be revised

Analysis of Student Work

Janna

Janna was the top scoring student in the class going into Week #8. She also turned out to be the top scorer in the class for the semester. However, when we look at Janna's work on the last slide of her *PowerPoint*, we are surprised if not shocked at her final answer, i.e. that the

% Increase in Property Tax with the 10% Cut in State Aid = ,13145

Following is Janna's work for slide #10:

Answer Key	Janna's Work

Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 = .131448 =13.145%

Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 **= ,13145**

What are we to make of Janna's response? There are some familiar digits, but her response is not even a number let alone the answer. And we certainly would not want her to share this slide with the school board and community as the summary of her presentation.

Because Janna was the top student in the class, we picture her meticulously tapping away at her calculator ─perhaps the one on her cell phone ─ painstakingly following the required steps toward the answer, but not really understanding either the process or the result of the work she is doing.

In terms of assessments and assessment data, what grade shall we give her on her project? Some might argue that she had all but the last line of the project, so then perhaps a 95%. But others might say that she spent a lot of time and energy but didn't come up with anything of value, so then perhaps a 0%.

I'll leave that decision to the reader, but it seems clear, that Janna's Master's Degree, years of teaching experience and desire to become a licensed school administrator notwithstanding, Janna somehow missed the boat to the *Land of Meaning,* at least as far as middle school math is concerned.

Siah

Unlike Janna who made it almost to the end of her presentation, Siah only made it to Slide #5 before disaster struck. Students had learned that there are two ways to figure property taxes: one based on the full market value of the property and the other based on the assessed value of the property. They had also learned that, in the district they are studying, the two methods are connected by the formula:

Assessed value = 1/ 75 x Full market value

For example, if the full market value of a house is $750,000, the assessed value for the property is given by

Assessed value = 1/ 75 x Full market value
= 1/ 75 x $750,000
=$10,000

Here 1/ 75 is the State Equalization Rate (New York State School Boards Association, 2015)
Students have also learned that there are two tax rates: The True Tax Rate (TTR) based on full market value and the Tax Rate (AV) based on assessed value. The two rates are connected using the State Equalization Rate and the formula

Tax Rate (AV) = True Tax Rate (FMV) x 75

It's the Tax Rate (AV) that is used in the budget documents and presentations (NYSED, *Budgeting Handbook*, 1998).

In slide #4, students determined the Tax Rate (TTR) based on full market value as follows:

Slide #4

The New True Tax Rate based on Fair Market Value
after the 10% Cut in State Aid
True Tax Rate(TTR) = Local Contribution ÷ Total Value of Homes
= $50,342,137.98 ÷ $2,767,500,000
= 0.01819

Here is where something goes horribly wrong for Siah.

Answer Key
Slide #5
The New Tax Rate (AV) based on Assessed Valuation after the 10% Cut in State Aid
Tax Rate (AV) = True Tax Rate (FMV) x 75
= 01819 x75
=1.36425
=$1.36425/$100
Remember: 1/75 is the State Equalization Rate

Siah's Work
Slide #5
The New Tax Rate (AV) based on Assessed Valuation after the 10% Cut in State Aid
Tax Rate (AV) = True Tax Rate (FMV) x 75
0.01819 = 50,342,137.98 x 75
=37,756,603.485
Remember: 1/75 is the State Equalization Rate

What are we to make of **this** response: a tax rate of 37,756,603.485? As was the case with Janna's presentation, we certainly would not want Siah to share this slide with the school board and community as part of her presentation.

It's clear that Siah has little or no understanding of what's going on here. In terms of assessments and assessment data, what grade shall we give **her**on her project?

Again, I leave that decision to the reader, but it seems clear, that as was the case with Janna, Siah's Master's Degree, years of teaching experience and desire to become a licensed school administrator notwithstanding, Siah also somehow missed that boat to the *Land of Meaning*.

Alan

AlanPohler is a Rabbi and Principal of a Hebrew school. Alan informed me early on that he had a "deficiency in mathematics" and that he would not be able to do the parts of the assignments that involve mathematics even given that those assignments would account for anywhere for 30% to 50% of his assignment grades.

I told him that he could not possibly achieve a passing grade for the course if he continued to "opt out," as it were, from doing the math. I suggested that he find a friend or colleague – perhaps a math teacher – to help him with the mathematical parts of the assignments.

Alan wrote back that he "…. could not in good conscience submit work that was not his own."

I responded that although his commitment to academic integrity was commendable, he nevertheless would not be able to pass the course without doing the mathematical sections of the assignments. I noted that having a "deficiency in mathematics" was a common complaint among the students and that, to be fair to everyone, as a matter of policy, I routinely suggested that struggling students have a friend or colleague who was a math teacher help them with the mathematical parts of the assignments. I reiterated that he would not be able to pass the course without doing the mathematical sections of the assignments. I would give him time to make up the sections of the assignments that he had missed, but then from that point on he would be expected to complete all sections of each assignment and submit them in a timely manner.

Fortunately, within a few days Alan began to submit his assignments and further escalation of his crisis was averted. But I reflected on the idea that Alan, a school principal and an important member of the school

community, could think it was alright to simply "opt out" of performing important aspects of his job because of his "deficiency in mathematics".

Didn't Alan have to make important decisions involving mathematics, not just in finance but in areas like staffing, supervision, and curriculum. In fact, wasn't he in charge of the mathematics department and responsible for things like student placements, hiring, training, evaluating, and terminating of staff?

Certainly, opting out of important administrative duties due to a deficiency in mathematics cannot be not an option for a school principal. It was at this time that I decided to take a closer look at this "deficiency in mathematics" syndrome. That closer look resulted in this case study.

Michael

Sometimes students had conceptual difficulties with the material. Michael was doing well until the very last slide:

Answer Key
Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 = .131448 =13.145%

Michael's Work
Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $793/ $792.43 **.1%**

Christina

Christina's conceptual problems began with slide #7 and were on-going:

ANSWER KEY
Slide #7
After the 10% Cut in State Aid If your home is worth $375,000, that means your home's assessed value is $5000. **Following the rule:** Total Property Tax = Assessed Value x $136.43/ $100 or Total Property Tax =$6821.50

CHRISTINA'S WORK
Slide #7
After the 10% Cut in State Aid If your home is worth $375,000, that means your home's assessed value is $5000. **Following the rule:** Total Property Tax = Assessed Value x $136.43/ $100 or =1.36428558 x $120.58 / $100 =1.645

ANSWER KEY
Slide #8

CHRISTINA'S WORK
Slide #8

After the 10% Cut in State Aid
If your home is worth $375,000, that means your home's assessed value is $5000. **Following the rule:** Total Property Tax = Assessed Value x $136.43/ $100 Total Property Tax =$6821.50

After the 10% Cut in State Aid
If your home is worth $375,000, that means your home's assessed value is $5000. **Following the rule:** Total Property Tax = Assessed Value x $136.43/ $100 =$1.35425558 X 136.43/100 = 1.861

ANSWER KEY
Slide #9
The Increase in Property Tax with the 10% Cut in State Aid Increase in Property Tax = Total Property Tax after the 10% Cut - Total Property Tax before the 10% Cut =$6821.50-$6029 =$792.50

CHRISTINA'S WORK
Slide #9
The Increase in Property Tax with the 10% Cut in State Aid Increase in Property Tax = Total Property Tax after the 10% Cut - Total Property Tax before the 10% Cut =1.861 – 1.645 = .216

ANSWER KEY
Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 = 13.145%

CHRISTINA'S WORK
Slide #10
% Increase in Property Tax with the 10% Cut in State Aid % Increase in Property Tax = Increase in Property Tax / Previous Tax = .216/.211 =1.02%

Again, I leave it to the reader to assign a grade to this project.

Priscilla

With Priscilla's work, we're not sure if the problem is conceptual with regard to per cents and decimals or simply a careless typographical error. Priscilla was also doing well until the very last slide:

Answer Key
Slide #11

Priscilla's Work
Slide #11

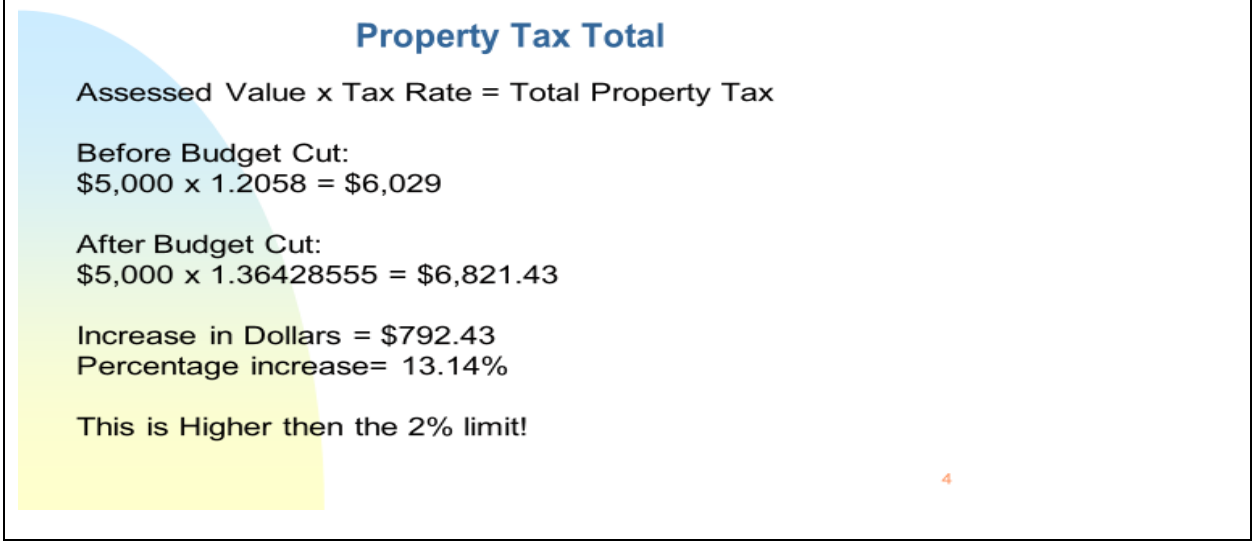
% Increase in Property Tax with the 10% Cut in State Aid	**% Increase in Property Tax with the 10% Cut in State Aid**
% Increase in Property Tax = Increase in Property Tax / Previous Tax = $792.50 / $6029 = .131448 =13.145%	% Increase in Property Tax = Increase in Property Tax / Previous Tax = $793/ $6029 **.13145%**

Whatever the source of the problem, the mistake in the result is critical if we want to know if the % increase in the total property tax is above the 2% limit, a question she fails to answer.

Christie

Christie's Project was the only one that might be considered to be "School Board Meeting Ready" in the sense that it had both the correct answer with regard to the percent increase in property tax and that it also responded to the questions about whether or not taxes would go up more than 2%, the State cap on property tax increases. Christie used her own *PowerPoint* formatting to arrive at the following final slide:

Christie's Slide #4



No other student responded to the property tax cap question although that may be due to the fact that they were following my template which did not have a spot for that summary statement. The last line may be in the style of one of our president's tweets, but the information is correct and we can see that Christie understands that and is excited about it.

Implications

In the previous section, we looked at examples of student work that involved some relatively elementary problem solving related to a graduate course in school finance. We saw that only one student out of a class of 25 was able to complete the entire task. With the rest, as far as the mathematics part of school finance is concerned, it was apparent that that the boat for the *Land of Meaning* had set sails and left them still standing on the *Dock of Ignorance.* We now consider the implications of this discovery in terms of guiding instruction and directing policy.

Of course, there is no way to tell from a case study how wide-spread the phenomena of what AlanPohler called *a mental deficiency in math* is (Lofland and Lofland, 1994). However, as far as guiding instruction is concerned, it seems that if a deficiency in mathematics can be shown to be wide-spread, then steps must be taken to bring educators up to speed.

State education departments must develop standards with regard to mathematics that reflect what administrators should know and be able to do in their professional life. Graduate educational administration programs must incorporate those standards into their programs and certification exams must reflect student mastery of the newly specified skill set. For those administrators already in the system, staff development linked to financial rewards may offer hope. However, periodic reassessment using the certification exams would insure that administrators maintain their expertise or face loss of certification.

As far as directing policy is concerned, it is important that the higher standards discussed above be vigorously pursued and enforced. Administrators cannot simply "opt out" of mathematics because administrators have extensive mathematics-related responsibilities. Consider, for example, some of the duties of a principal:

> The principal is a **manager.** As chief financial officer of the building, the principal is responsible for developing and managing the budget as well as other business-related activities (Brimley, Jr. et al, 2016).
>
> The principal is a **supervisor.** The principal is in charge of the recruitment, hiring, training, evaluating and either retaining or terminating of staff, including the mathematics staff (Glickman, et al., 2016).
>
> The principal has **curriculum** responsibilities. Will there be tracking? If so how will students be placed? What support programs will the school offer and how will they be run? Will there be curricular innovations like a STEM program? What extra-curricular and/or co-curricular programs will the school sponsor? (Oliva, et al., 2016).
>
> The principal is the school's **leader.** In his/her capacity as leader, it is the principal's job to communicate to the school community, the school's vision, goals, values and objectives. Mathematics is an important component of each (Oliva, et al., 2016).

Administrators cannot be allowed to lag behind ─to remain on the *Dock of Ignorance*, as it were ─when it comes to their mathematics educations. Their jobs are simply too important and mathematics is a big part of their jobs.

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