SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF SAN FRANCISCO
UNLIMITED JURISDICTION

ELIEZER WILLIAMS, a minor, by SWEETIE WILLIAMS, his guardian ad litem, et al., each individually and on behalf of all others similarly situated,	)	
Plaintiff,	)	
vs.	)	No. 312236
STATE OF CALIFORNIA, DELAINE EASTIN, State Superintendent of Public Instruction, STATE DEPARTMENT OF EDUCATION, STATE BOARD OF EDUCATION,	)	
Defendants.	)	

DEPOSITION OF CAROLINE M. HOXBY

Los Angeles, California
Tuesday, August 5, 2003
Volume 2

Reported by:
GINA CANGIAMILA
CSR No. 10256
JOB No. 44191

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Deposition of CAROLINE M. HOXBY, Volume 2, taken on behalf of Plaintiffs, at 1616 Beverly Boulevard, Los Angeles, California, beginning at 9:40 a.m. and ending at 4:15 p.m., on Tuesday, August 5, 2003, before GINA CANGIAMILA, Certified Shorthand Reporter No. 10256.

APPEARANCES:

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EXHIBITS

Los Angeles, California, Tuesday, August 5, 2003
9:40 a.m. - 4:15 p.m.

CAROLINE M. HOXBY,
having been first duly sworn, was examined and testified further as follows:

EXAMINATION (Resumed)

BY MS. LHAMON:

Q. Good morning, Professor Hoxby.

A. Good morning.

Q. You understand the same rules that applied yesterday still apply today?

A. Yes.

Q. And they'll apply throughout the deposition?

A. Yes.

Q. So --

MS. DAVIS: You know what, I just thought I'd just interrupt you. Professsor Hoxby went through the reports as we discussed yesterday, and I don't know if you want to start with that.

MS. LHAMON: I thought I would.

Q. So thank you for going through the reports. And I understand that you have reviewed, tell me if I'm correct, reports of Robert Corley, Glen Earthman,

Linda Darling-Hammond and the Oakes Synthesis Report and the Oakes Textbook Report; is that correct?

A. That's correct.

Q. And you were looking for any research relied on in those reports that you viewed as good, better or best?

A. Right.

Q. Terrific. So if you'll tell me, just starting from the top and going down, what you found.

A. Right. Let's talk about, I think the report that's perhaps the most interesting to talk about in this regard is the report of Linda Darling-Hammond. And I noted several things in this report.

First, I think I should start by saying that she is interested in the question of teacher qualifications largely. And the big issue for people doing research on teacher qualifications is that teacher qualifications are generally not randomly assigned to schools.

More qualified teachers tend to be at schools where children are more affluent, simply because most teachers teach where they live. So most teachers, in fact, teach within a few miles of where they live, so that if you are in an affluent school district, you are much more likely to have the teachers who live there and

are often married to affluent spouses who live there. So their salaries are not the main reason that they live in these affluent school districts.

The consequence of this is that we will often see that more qualified teachers or teachers with more credentials are living in areas that are more affluent. And this is a serious problem for research, because we need to separate the effect of qualifications, per se, from the effect of family background.

There are a few ways to do this. One of the main ways that you could do this is by looking at what happens when a state changes its policy about qualifications. It could raise its standard for credentials, and you could look before and after it has raised its standard for credentials.

What I found disturbing about the report by Linda Darling-Hammond was a couple of things. First, at no point during the report does she draw the reader's attention to this basic problem; that you cannot assume that teachers with good qualifications have just been randomly assigned students, and that you really need to work hard differentiating between the teachers' qualifications and the effect of students' family backgrounds.

I think that's a serious problem, and one that

would not -- would cause a great deal of concern with any type of peer review. That is the very first filter. We would expect that sort of candor on the part of an expert or the part of a person who's purporting to give evidence, if for no other reason that it alerts the reader to the idea that she or he ought to try and distinguish between evidence that does distinguish between the effects of the teacher qualifications and the effect of family background, and that does not.

So I found it disturbing that that was in the -- in this report.

The next thing that I found disturbing is that she herself does not distinguish between studies that do a good job of attempting to control for family background, or take that issue very seriously, and studies that do not.

They frequently are listed all together in a paragraph, and she would cite them all together as they -- they were similar.

I think the implication of this is that there is often a good deal of evidence or a claim that she's making. She'll cite ten studies, nine of which would be of a purely correlational or low quality, and another one which might be better, and she'll imply that they all come to the same conclusion, and that they're all of

the same quality, and that there's so many studies that she really can't discuss the methodology of any of them.

In fact, that's not a good way to do scientific research and education. You should distinguish among the studies that are in poor quality and discuss the studies that you think are good enough in quality, so that you can discuss their methodology. And you can be up front with readers about them.

Then, finally, I found it quite disturbing that in some cases, when she does cite a good quality study, often in a list of other studies that are not equal in quality, her interpretation of the study is often exactly the opposite of that, what the authors themselves would have come to.

I mean, there is really deliberate misrepresentation of some of the conclusions of these studies. And that I found particularly disturbing, because the studies, these studies that are misinterpreted are often in a long list of studies, so that a reader would think, well, they're all coming to pretty much the same conclusion, they must all be doing pretty much the same thing.

And, in fact, there are a variety of methodologies. She doesn't distinguish the

methodologies, nor does she distinguish the fact that the ones with the better methodologies often come to the reverse of the conclusions that she is saying they did.

So that struck me as being disingenuous. For instance, on page 14 she's describing a recent analysis by Rifkin, which is, in fact, a really quite good study, and she's also discussing some studies by Sanders and co-authors.

And in these studies, these studies directly contradict most of the claims she's making about the importance of teacher credentials, directly contradicts. And she does not mention that. In fact, she implies they support her conclusions.

So I found this to be disturbing because I think there are so many studies cited in her work that no reasonable reader would be able to read all of them carefully, and would probably assume that they all support her studies, rather than going and -- and if you don't know what's in the original study, I don't think you would be able to make that sort of determination.

Q. I see you're turning the page for the studies that you just mentioned on page 14, the Rifkin --

A. Sanders.

Q. Thank you. Where did those fit in your definition of good, better and best?

A. Well, this study by Rifkin, Henersheck and Cane is, I would say, fits someplace between better and best. It is one of the best studies on teacher effects. It is not a study -- it is a study that shows that teacher credentials do not matter.

So it's one of the best studies that she cites, but it also directly contradicts most of the other studies that she cites in this work.

Similarly, that these studies, of which Sanders is one of the authors, come to similar conclusions. So there are three studies here by Sanders.

Q. And the Sanders studies, all three of them are also between better and best?

A. You know, I would like to have been able to look at them all, but because I was trying to do this last night in a relatively abbreviated period of time, and I didn't have full access to all of these studies, I wouldn't want to rate these exactly, but these are definitely higher quality studies.

Probably in the better quality, at least, but just judging from what I know of the ones that I have read by Sanders and his co-authors, but again, these are not studies that confirm that teacher credentials are a good idea.

Q. And just before we turn to the next -- I

appreciate this, and sorry for interrupting you, but I am interested. I think you told me yesterday that you had had your secretary pull all of the studies?

A. At the time, yes.

Q. At the time that you were preparing your expert report?

A. Yes.

Q. So all of the studies cited in each of the five reports that you looked at last night?

A. No, I did not have her pull every study. I had her pull studies from which I cannot tell from the description, or I did not pull the study myself, so I needed to look at the study in order to have some idea of whether it was a high quality study or not. In some cases I could tell just from the description.

Q. Of the quality of the study?

A. Yes. Because there's an omission of -- there's a clear omission of the source of things we would look for in a good, better or best quality study. So sometimes I can tell simply because it's clear that those elements were omitted.

Other times it's not as obvious, and you need to look more carefully.

Q. Thanks for clarifying. When you're going through the studies that you've tabbed in these reports,

if you could let me know this is a study that you could -- could tell from the description of the report, and that's the basis that I used for the -- and I will -- my secretary pulled it or -- and so I looked at the study itself.

A. Right. In most cases I knew the study already.

Q. Why don't we do this. When you're talking about them, we'll assume you knew the study already, unless you say specifically, "I pulled it and looked at it in order to reach a conclusion."

A. All right. In many cases I'm sure that the two are actually linked. I have a copy of the study in my office, and I know the study, and that's why I have the study.

Q. Okay. Well, you can clarify.

A. Right.

Q. Thank you.

A. So that's just an example, but there are, I think, other examples that are similar of misinterpretation.

Then the final thing that I found really quite disturbing is that to the -- she tends to cite studies in long lists, and not describe studies in detail, and just say, "I've made an assertion, and here are a lot of studies that support this assertion."

And -- but she does focus particularly on the results of some studies. Now, at the point where you choose to focus on the results of some studies, a researcher does have the option at that point of focusing on the studies that are the best studies and describing them in a little bit more detail so that the reader has some notion of how you try and get evidence on a question like this.

So the last thing that I found disturbing in -- during the times that she does decide to focus on a particular study, it is typically one of the worst quality studies. She is not picking out the best quality studies.

And to me that is disturbing because she is not drawing the reader's attention to some of these basic issues, like the fact that we want to distinguish between a child growing up in a family that is affluent, that has a lot of resources, that has a mom and dad who have gone to college, and the effect of having a teacher who is more likely to have, say, a masters degree or more likely to have pedagogal courses.

Those are quite different things from one another. I would have liked to see her cite at least one study that looked at a state's change in its credentialing laws, and tried to see the effects of

that.

And the reason I would have liked to see her cite one study like that is, that's what she is advocating in this expert report. So having the entire expert report, in which no study like that is cited, I think, is disturbing, because there are studies like that.

They tend not to come to the conclusions that she's coming to, and she's neglected all of them. So that was the -- you know, there are a few other things I found disturbing.

MS. LHAMON: Can I just interject and ask you to read that back?

(Record read.)

BY MS. LHAMON:

Q. So you were going to go to the next page, and I just interrupted you to have the record read back. Sorry.

A. I was going to point out that some of the studies she cites on page 20, in particular, Goldhaber and Brewer, Betts, Ruueben and Dannenberg, Ferguson, Darling-Hammond, are all studies in which the controls for family background are really not sufficient to -- to -- for us to distinguish fully between the effects of teacher certification, say, and the effects of family

background.

We know that when you start to control for family background in studies like this, the effects of teacher certification decrease dramatically, which suggests that if you were to do a really good job of control for family background, you might or might not find any effects of teacher certification.

All of these authors, with the exception of Linda Darling-Hammond, in her own study, do draw the reader's attention to this problem. So she must be aware of these problems if she's citing these studies, and yet there's really no discussion of this here.

And I feel like it's almost trying to pull the wool over readers' eyes so that they don't recognize that they need to try and distinguish these -- these two things.

From -- there are many other notes that I could make here. There are some relatively good studies that she cites on page 23, but she cites them only to criticize them. These are Balleu and Podgursky in particular, which I think is a really very good study.

Q. I see you turning the page. The studies that you cited from page 20, is none of them even a good study under your standard?

A. I would say the only one that's approaching

good there is Goldhaber and Brewer.

Q. But it's still not quite good?

A. No. Because one of the difficulties is that you really need to do a good, an excellent job of control for family background if you're trying to isolate the effect of teacher credentials.

And that's because more affluent children go to school with teachers who are themselves more affluent, because they live in the same school district. You need to distinguish between these two things.

Similarly, control for something like the percentage of children at a school who get free and reduced priced lunch is very far away from control family background. Families differ tremendously. It's not just that some are poor and some are non-poor.

That's just one dimension in which families might differ, but families in a -- can support their children by taking them to the library, taking them to museums, helping them with their homework, setting up a quiet place for them to do their work, being supportive about what they're doing in school, going to parent/teacher conferences, complaining if they end up getting assigned a teacher who doesn't appear to be teaching what is supposed to be taught in, say, the third grade.

A family that is really supportive of its child is doing a lot of activities, and you need to control for those activities, and not just whether or not the family is eligible for free or reduced price lunches.

In the case of the study like Ferguson's study, really the only things he's controlling for are very few variables about a child, like whether or not he is eligible for free or reduced priced lunch and his race. And that's just not enough.

You really need to look at the other things that are happening within the family, and control for these first in order to just get to the good standard.

And, you know, frankly, none of these studies even comes close to what is considered to be high quality research on this issue at this point, which is research that looks at a policy change around teacher certification.

What we are trying to do, what good researchers are trying to do now is, they try to look at states that raise their standard for teacher certification, and they want to see what happens in the schools that have to change the sorts of teachers who they are hiring.

So none of these studies are even in the ballpark of that, that sort, the sort of study that is now considered high quality. And I do not think that

any of these studies could make it past a reasonable peer review at, say, the National Science Foundation now.

Q. Okay. Thank you.

A. I'm not going to go through all of the studies that I had comments on here.

Q. Well, just to keep you from skipping them, I asked you to identify last night all the studies that you thought were good research or better or best identified in each of those five reports; and I am interested to hear what you found.

A. Okay. So on page 23 there's a study by Ballou and Podgursky that I considered to be at least good, but it's not -- it's a little bit tangential.

There's also study by Walsh and Podgursky that I would consider to be good, but again, somewhat tangential.

There is a -- there are some studies on page 27 that were very good for their time. Those are Bowles, Coleman, et al. and Hanushek. However, those studies are in some cases substantially more than thirty years old, or at least thirty years old. They were good studies for their time. I -- they are not what people do now, in fact, because I think people have realized that they have great flaws, but I wouldn't criticize

them as having been low quality studies for their time.

Unfortunately, they are also -- also her -- her interpretation of some of them is really just very much out of line with what the authors themselves said in those papers.

In particular, I'll draw your attention to the Coleman, et al. study, which quite famously found that teachers' verbal ability had a very, very small and often statistically insignificant effect on student achievement. So this is just a misrepresentation of what that study finds.

And Coleman himself was aware of the fact that teachers were not predominantly assigned to children, and draws the reader's attention to it, this in the study.

So she's not only misinterpreting his conclusions, but she's also not relaying some of the information that he gave to explain how one ought to intrepret those findings.

I think -- I just don't think you can describe evidence without the correct interpretation, without the correct caveats, and not be misrepresenting things.

Another good example is some of the work by Richard Murnane on this page. Again, that is good quality work, but he himself would draw -- does draw the

reader's attention to the fact that teachers are not randomly assigned to students. And I'm sure if you were to ask him, he would say you should not interpret it without that sort of caveat. She's not including those sorts of comments.

There is this work on page 28 about teaching experience appears to matter, especially in the early years. Some of this, some of this finding is a very common finding.

And in fact, for instance, the paper by Mernane and Phillips or Hanushek, Rivkin and Kain and Singleton, those are all fine papers, but there's very little disagreement about this one fact.

Unfortunately it doesn't have any policy implications, really. You can't say that no one is ever allowed to -- has only one year of experience, because teachers always have to be hired and go through the first couple of years of experience.

It is accepted, though, that usually first and second year teachers are less effective than teachers who have somewhat more experience than that.

However, I think the evidence also is the benefit of experience levels off after about three years. She suggests five to seven years. I don't know where she's gotten that number from. It's not from the

studies that she cites on page 32, that we have a list of studies that are actually really quite low in quality, combined with one study that I think is a very good study.

So we have Angrist and Lavy, 1998, which is a good quality study, and then we have a list of studies immediately following it. And those are all much lower quality studies.

And this is an example where the first study that she cites, which is a high quality study, and certainly by two very good researchers, comes to significantly different conclusions than the remainder of the studies in the list. And she interprets them as though they all came to the same conclusion. I found that disturbing.

And then finally, on page 49 there are some studies, including one by Stinebrickner, 1998, and another by Stinebrickner in 1999, and one by Dolton and van der Klaaw in 1999. These are at least better quality studies, again, surrounded by studies that are not as high in quality, such as Bow and Stone and Rickman and Parker.

There is a -- again, an implication that they all come to similar conclusions. And, in fact, they do not. In particular, the Stinebrickner studies, which

are really very high quality studies, do not find that teachers are particularly responsive to wages in their decision to quit.

So the studies that she's citing directly contradict the statement that she makes in the next sentence.

And, again, I found that disturbing, because if you have not read all of these studies, you would assume that they were all being cited because they all supported her conclusion, when, in fact, some of them do not support her conclusions at all, and there are big differences among these studies in quality.

Baugh and Stone is probably the lowest quality study in the list there, and it's the one that ends up getting the attention that she specifically comments on, but the higher quality studies which contradict that are just -- are put in the sentence as though they agree. And they really do not come to the same conclusion.

So, again, I find this whole report somewhat disturbing as a fellow academic. I think that's the one that's going to take us the most time, thank goodness.

The study by Glen Earthman is largely a description of different studies that have looked at the effect of facilities on children's achievement. And again, we have the basic problem that facilities are not

randomly assigned to children.

If we build a hundred schools that are all identical, and we put some in more affluent areas and we put some in inner city areas, or if we put -- let's say, forget about putting some in affluent areas and some in inner city areas. Let's just say we put some in schools where the principal is doing a good job, and some in schools with similar demographics where the principal's not doing a good job.

You will end up seeing that school where the principal is not doing a good job have lousy facilities after a while, because part of a principal's job is to monitor maintenance, monitor repairs, deal with contractors, use his facilities budget well.

So when we look at a facility that is low in quality, we have to distinguish between whether that is -- that was caused by insufficient funding for facilities or a badly -- somehow it was the state's policy decision to give a school a bad -- a bad building, or whether that is the effect of having had a manager who is not a good manager, even though he may have started off with the same building as other managers.

When you have a principal who is a bad manager, it's not also surprising that he might have students who

are lower achieving than a principal who is a good manager managing his buildings.

These things tend to go together. If you're a good manager of your facility, you may also be a good manager of your teachers, a good manager of your other resources, like your textbooks, and things like that.

So facilities are not necessarily just telling us about the relationship between facilities and achievements, not just telling us about the effect of facilities, it is also going to pick up the effect of school management in general.

And again, I would like to have seen, again, Ertman draw the reader's attention to the fact that you cannot interpret the raw correlation between the appearance of a facility or facts about a facility and student achievement, as though that were a causal relationship.

It is probably 99 percent not a causal relationship. We don't know how much it is, but we'd like to focus on studies that at least give a good, solid attempt to draw our attention to this problem, and distinguish between the effect of the facilities themselves and the effect of poor school management or the demographics that may be associated with poor facilities.

Let me draw your attention to one of the few studies that I think is a good study that he cites in this report. It's from 1931, unfortunately done by the New York Commission on Ventilation, and he cites it on page 6.

It is a study in which there was actually a policy change, where you can think of it as a policy experiment, varying temperatures in schools. And that seemed to have an effect on student achievement. This is back in 1931, so I don't know how much it applies, frankly, to Los Angeles today. Ventilation in school buildings have changed a lot between 2003 and 1931.

What I would have liked to do, though, is for him to draw our attention to the fact that this was a study that really did rely on better evidence, and note that many of them were recent studies that he cites did not do the same thing as this 1931 study.

Part of what we're supposed to do as researchers is help our readers understand how high the quality of evidence is.

Q. And before you turn to the next one, you've used the phrase "good and better" for the New York Commission on Ventilation study?

A. That's really a best quality study. It's a best quality study. Admittedly, I don't know whether I

would want to extrapolate from a study done in 1931. Ventilation standards were completely different in 1931 than they are today.

So I just -- I don't know whether we should extrapolate, but for 1931, if I were trying to make a policy decision about ventilation in 1931, I wouldn't -- it would have been a best quality study to use.

There is another study on page 7 that is, I would say, a better quality. This is a study in which, again, there was a policy experiment about noise in the classrooms, and there would be some problems with a study like this, but on the whole, I would say it would be a better study.

Again, I would have liked him to draw attention to the fact that of all of the other studies he cites, this is one in a section where he cites -- he cites ten other studies, none of which is even good in quality.

This is one study that's cited, and he doesn't draw our attention to the fact that it's really doing a better job, and that there's the appearance that there is a lot of evidence that supports this, where it's actually the only one high quality study in this section.

Q. And which is that study on page 7?

A. I'm sorry, it's Bronzaft.

Q. Could you spell that?

A. B-r-o-n-z-a-f-t.

Finally, I will note that on page 14, he includes a description of the class size study by Finn and Achilles. I think this is a study that is of better quality.

There have been some -- there have been some more recent replications or re-visiting of the same data that have not verified the results of Finn and Achilles, so this is now, I'd say, a more controversial conclusion, but I think that the study is a better quality study. It's on class size, however, and not particularly on facilities.

I don't know whether -- what to conclude personally as a reasearcher on this question, because now there is so much conflict using exactly the same data.

Steven Lerner at Warton has come to quite different conclusions, and therefore, I don't know whether the Finn and Achilles study is correct or incorrect. It is a good -- it is a good or better quality study, however, but sometimes even better quality studies can be overturned by future studies.

It's not a -- it's not a study of facilities. However, the facilities were not altered in Tennessee at

all during this experiment.

I think we can go very quickly through the next report, which is Jeannie Oakes' report on textbooks. I was really unable to find any good quality studies here except for the studies. Let me actually back up a minute.

Most of this report is not about the causal effect of textbooks on student achievement. There is a good deal of description in the report. There is, also, a lot of the report is devoted to a review of California's laws and recommendations about how those laws should change.

What I was focusing on, and I believe you wanted me to focus on, was studies that look at the effect of techniques on student achievement. So let me just say that most of this report is not devoted to that question. The part of the report that is devoted to that question starts on page 8, and finishes on page 10. So it's two pages out of a really very long report.

In these two pages there are a number of studies cited, probably thirty along those lines. There are some higher quality studies in this section. For instance, there's a study by Wage, Hartel and Walberg, which I would say is better in quality. And there is a

study by Pritchett and Filmer, 1999, that I guess I would say doesn't really fit, doesn't really fit this model of looking at the effects of textbooks on student achievement, but is a good quality study. It's really tangential.

And finally, there is a study of Harbison and Hanushek, 1992, that is, I would say, a better quality study. However, these studies do not always come to the conclusions that Jeannie Oakes asserts they do.

Again, this is an example where we have a long list of studies, they vary in quality. Some of them come to the conclusions that the expert is touting, some of them do not come to those conclusions. They are all described together as though they came to uniform conclusions, and as they -- they had uniform methodology. They do not come to uniform conclusions.

So I think it's somewhat deceptive. For instance, the Wage, Hartel and Walberg study, I know that study quite well, and I know its authorities quite well, and I know that they would say that textbooks do not have an effect on achievement in the absence of strong incentives for the schools to do a good job.

And, similarly, the study by Harbison and Hanushek, it does not -- it is a study of cost effectiveness, but does not actually show that textbooks

have a strong statistically significant effect on student achievement.

So they're comparing the costs of different types of things, but she implies that it's a very cost effective way to raise student achievement. They do not find that in --

Q. Which page are those three studies on the --

A. Page 8. That's really the only part of this report that's devoted to that question.

And finally, let's discuss the report by Robert Corley briefly. This report is quite different than the -- than the others, in that most of it does not rely on statistical evidence. It relies almost entirely on anecdotal evidence.

In other words, Robert Corley visited schools and comments on what he saw in schools. And in other cases he reports visits of schools by other people and what they reported.

So anecdotal evidence has its limitations, because it's not necessarily represented, but I think the -- I think this is largely an expert report based on anecdotal evidence.

For what that's worth, however, I will say that Robert Corley is one of the only experts here who draws our attention to the fact that in many cases, the

conditions that he is reporting or seeing are not a function of what the -- of the money that the school had to spend on facilities or maintenance, and not necessarily a function of a lack of state rules about these things.

He routinely draws our attention to the fact that individual managers, principals or superintendents, or sometimes school boards are responsible for having made poor use of funds on facilities.

So I see this report, although anecdotal, as being in some sense more honest than some of the other expert reports I read. He does not actually attempt to link facilities with student achievement in this report.

There is an implication that they are related to one another, but there is no part of this report in which he makes the claim specifically, because I saw facilities that were poor in a particular school that I happened to visit, that accounts for student achievement being low in that particular school.

It's possible that he does not make that sort of claim, because in fact, this is all anecdotal evidence, and there's no real attempt here to be representative of schools.

And he also notes that there will be other

schools with very similar demographics, a similar amount of money to spend that will be more specifically on the ground and on facilities management.

So again, it's an anecdotal expert report, but there is a -- I don't myself think anectodal evidence is terribly useful for policy making; but that being said, it is a more honest report than some of the other ones.

Q. When you say "some of the other ones," are you referring to the other four that you looked at closely?

A. To the other three here that I looked at closely.

Q. Excluding the Oakes, since they --

A. Excluding the Oakes.

Q. So then we're just talking about the Earthman, Darling-Hammond --

A. Yes. And the reason I say it's more honest, that he draws our attention to some of the problems with interpretation. And I think that's very important for policy making.

The Synthesis report, I decided I really could not go through it and choose studies that were good or better or best. And that's because there are many studies that she cites here in a very glancing way, or that she only cites by citing another expert report. So I would have had all the other expert reports, and I

would have had a lot more access to the internet, just much more ability to actually look at things than I had.

There are just too many studies cited in here to try and do a reasonable job like that in the short amount of time that I had.

Q. Last night?

A. Yes, last night.

Q. So thank you very much for going through it this morning.

Just so I understand, when you were preparing your expert report in the case, did you pull all of the studies cited in the synthesis report as well, or review them based on your prior knowledge of those reports, or did you exclude that also from your analysis when you were writing the report?

A. When I was writing my report, I looked at the synthesis report. And in many cases, I was able to either look at the other expert report, which she is synthesizing, and draw conclusions based on my knowledge of those studies from those other expert reports, or look at individual studies that were being cited in those other expert reports that I did not know.

With just the Synthesis report I can't really do that, because, A, I don't always have the other

expert report that she's citing, and B, even if I did, there's just too many other studies for me to assemble in a short period of time and attempt to recreate that whole -- that whole process. That was quite time consuming.

Q. So I take it it's not productive for me to give you the other reports tonight, to try to go through this process again?

A. I think it would just take too long.

Q. But it is something that you did in the first place?

A. Yes.

Q. And then you no longer have that tabulation, because that's part of your draft, and it's been written over?

A. Yes.

Q. Thank you. Ms. Hoxby, you've had to talk for a long time to explain that to me, and I very much appreciate it very much. If you want to take a break --

A. I'm happy to.

(Recess.)

BY MS. LHAMON:

Q. Professor Hoxby, you testified earlier this morning that the basic problem with research about teachers is that they're not randomly assigned among

schools; is that correct?

A. Yes.

Q. And can you tell me what the basis is for that view?

A. Well, I would say the best research on this study is a very recent work by a woman named Susanna Lobe, who's at the Stanford Graduate School of Education.

And she has looked particularly at how it is that teachers -- where it is that teachers end up teaching. And it appears that distance to their own homes is the -- is a very large factor.

Most teachers just want to teach in a place that's convenient. And therefore, many teachers teach within a couple of miles of their own home. This allows them to get home and see their kids after school, pick up their kids from the same school, that sort of thing.

As a result, that's probably the single biggest determinative, is the distance to his or her own home. In most cases, teachers are the secondary wage earners to their spouses. So where they choose to live is based more on the spouse's earnings than the teacher's own earnings.

So you can almost think of teachers being allocated to school districts on the basis of where

their spouses need to live for the spouse's job. And that's -- so that's one of the major things.

Q. Thank you. You also testified, I believe, that a basic problem is the facilities are not randomly assigned; is that correct?

A. Yes.

Q. Can you tell me the basis for that view?

A. Well, I think the basis for that view, especially in California, is clear. We have -- California is the state in which schools are very equally funded on the whole.

And in fact, schools that have socio-demographics would suggest that the students that are poorer tend to get more compensatory money than schools that do not.

So it is not the case that a school with lower socio-economic status has a smaller budget. In many cases, their relationship goes the other way. It doesn't always, but in many cases it does.

It's also -- it's also been observed that facilities will decay in the absence of good management by school staff. And a lot, therefore, of what we see in a place like California is relatively equal amounts of money being given for facilities, and for that matter, textbooks.

I don't think we think of textbooks as facilities, but they are a type of equipment of relatively equal amounts being given for facilities and textbooks and equipment.

And differences on how these reserves are managed accounts for the differences we see in facilities now. The differences in management are not always correlated with the demographics of schools.

Again, there are some very successful schools in poor areas where managers are good, and they maintain their facilities well, and they have -- they keep their textbooks in good condition, and they keep good control of their equipment.

So this is those sorts of observations. We look at the diversity of equipment in textbooks and facilities across schools not just in California, but in the United States in general. And we can see that a lot of it is not correlated just with budgets.

Q. Is there research support for the view that facilities are not randomly assigned, or is that a view that -- what is the support for that view?

A. I think the support for the view is based on a combination of observational studies of the condition of the facilities and statistical knowledge of the budgets that different schools have for facilities.

However, observational studies of what facilities and equipment look like are never totally objective. People walk into a school and they make a somewhat subjective decision about how to rate its facility or its cleanliness or the maintenance of its books.

So -- and it is rarely the case that the person gathering evidence has absolutely no interest in what the outcome of the study is. So we're not -- it's not an area where we're going to have, perhaps, terribly high quality studies of.

Q. When you said that it's especially clear in California that facilities are not randomly distributed, were you referring there to the fact that California is very equally funded on the whole?

A. I think what I was saying is, it's especially clear in California that the non-randomness and the distribution of facilities or equipment is not closely related to differences in budget.

In some states there are much bigger differences in spending among districts, and there it might be harder to tell whether a district that has a big budget has good books because it has a big budget and is able to spend a lot on textbooks or facilities, or because it is managing its budget better dollar for dollar.

In California, because there is much less diversity in spending among school districts, it's clear that variations of schools can be associated with management, as opposed to big differences in budgets.

Q. You used, a few sentences ago, a few answers ago, the phrase, "the total budget for a school." What are you including in the total budget for the school?

MS. DAVIS: In California?

MS. LHAMON: Sure. As you used it in your answer.

THE WITNESS: There are two categories of expenditure that are considered to be total. One is total current operating expenditure, and the other is total expenditure. The difference between those is capital expenditure.

So I was referring to really either one of those two totals. The statement would equally apply to either one, but most people look at total current operating expenditure and then add on total capital expenditure, but smoothed out over the years, only because you can end up with a big blip in capital expenditure in a year when a school building is built, but that doesn't mean that expenditure has risen dramatically one year and falls in the next year.

The reason people look at both is so that they

can compute the capital part of the expenditure.

BY MS. LHAMON:

Q. I believe that we -- I used the phrase "total budget," you used it in the context of saying that schools with poorer students tend to get higher amounts of total budget to their schools than other schools in the state.

A. For their total operating expenditure, yes. The capital expenditure in California, because it's connected to bonds, will vary with district property wealth to some extent.

Q. So taking, then, the operating expenditures only, what are the sources of funds that go into the total budget that you're referring to as you've used that phrase?

A. In California, all of this money is allocated by the state. So it's going to be the state's distribution of property tax revenue, the state's distribution of compensatory education budgets, funds, and the state's distribution of textbook revenues. The state has some distribution of transportation related funds. It's all of those eight components added on top of the basic state per pupil amount.

Q. So then you are adding within the state's distribution of federal funds, also?

A. Yes. Well, I should say that federal funds are much more directed towards school districts with poor socio-demographics than state funds are in California. They are more focused on -- that's normal. That's true in every state in the United States.

Q. Thank you. You also testified earlier that facilities are probably 99 percent not causally related to students' performance; is that correct?

A. Yes.

Q. And what's the basis for that view?

A. I think the basis for that view is states like California, facilities are, to a great extent, a symptom of the quality of management in a school rather than a prime cause of whether learning is occurring well in schools.

And I say this because there are rural schools in the United States that could not be said to have plush facilities, and they are able to achieve very high levels of students' performance.

It just -- facilities just do not appear to be as important as things like whether or not your teacher is motivated and cares about students. It may be that a teacher who's motivated and cares about students keeps her classroom really clean and it looks nice, but that may be more a reflection of what the teacher is like as

a person and the sort of effects she has on students, rather than evidence that the cleanliness of the classroom is, itself, causing the student to learn.

So I think -- I think to a large extent people believe that facilities tends to be a symptom of good management, good teachers, as opposed to the cause of good student performance.

Q. So then the 99 percent is based on an understanding of the disparity of facilities in California in particular, and not so much on statistical studies, or something like that?

A. Well, it's also based on the fact that when we do statistical studies and we look at facilities budgets that different schools have, there is no statistical relationship between the facilities budget of a school and student performance, once we've controlled wealth or family background.

So nevertheless, we do see great variance in facilities. We therefore suggest that since it doesn't appear to have a causal effect on student performance, it's probably a symptom of good management.

Q. Okay. Thank you. Staying with that, this notion of good management for schools, I believe you testified earlier that when examining disparities in school facilities, you have to look at whether the

causes is less funds, a state policy or bad management; is that correct?

A. Yes.

Q. First tell me how you came up with that list of the three things --

A. Right.

Q. -- and excluding other things.

A. Right. Well, budget is, of course, the first thing that you would look at, because it is a -- it is a constraint on facilities. If you only have $200.00 to spend per pupil on facilities and maintenance each year, what you can do with your budget is going to be different than if you have $500.00 to spend.

So that's the first thing that you're going to look at, is whether the budget is different. Because if you were to find that the budget for facilities was very different among schools in the state, that would probably be your first suspect for causes for the revealing or the observation of facilities' differences.

So we always look at budgets first, I think. Then the next thing you might look at was whether the state had rules or mandates that suggested that facilities were supposed to be maintained in a particular way.

Most state mandates on facilities in all states

are of the form, you should employ a legitimate contractor, you should ask for three bids on a repair job, you should have a contract with your janitors such that things like normal cleanliness is covered. I mean, these are sorts of guidelines that states give.

So we could look to see whether states that give more intensive guidelines than others have facilities that appear to be maintained much more evenly.

There's relatively few studies that have attempted to look at differences in state laws on facilities that have not found the effects of differences in facilities' variation.

I expect that is probably because it is just impossible to write a law that really manages facilities. You can tell a school that it needs to have three bids, but you cannot guarantee that those three bids are all independent; that one of them isn't from the principal's nephew.

You can attempt to do that in the law, but there's no substitute for on-the-ground management. And then management is really the residual explanation, so it is -- if it isn't the budget and it isn't the laws, then it must be the way that the budget or the laws are being managed.

Again, as I said, you can manage laws right; the way in which you implement the three bids requirement is a management decision. So that's why I would say that that really covers almost everything else.

Q. Okay. Have you conducted any investigation of the laws related to school facilities in California?

A. I have read the laws related to school facilities in California, read them back in January or February. So I -- I have a general sense of what they are like.

Q. And I'm not going to hold you to a particular statutory provision, but can you describe for me your general sense of where California falls in the number of laws that manage or don't manage school facilities?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: California is fairly typical for a modern -- for a contemporary state. There isn't a great deal of variation in the laws.

BY MS. LHAMON:

Q. And so by being fairly typical, that means that California does what, in your understanding, about laws for managing school facilities?

MS. DAVIS: Same objection.

THE WITNESS: I think this is actually such a broad

question that it's difficult to answer.

BY MS. LHAMON:

Q. Sure. I understood you to say that state laws often say things like, don't hire your nephew for planning the school facility or for being a contractor, get three bids from different contractors before engaging in some facility's repair. Is it your view that California has laws like that that govern school facilities?

A. Yes. It has laws about having arm's length relationships with contractors requesting outside bids for projects over a certain size. These are fairly standard laws. Some of them are not written specifically for California schools. They are written for California public institutions.

Q. Okay. I should ask you also, what have you done to prepare for your deposition?

A. I reviewed my own expert report, primarily.

Q. And that was when you were at home, or once you had come to California?

A. When I was at home.

Q. What did you review it for?

A. Why did I review it?

Q. Yes.

A. So that I would be aware of what statistical

analysis I put in this particular report, and remember some of the details of either data or statistical procedures I had used.

Q. Did you have any conversations with anybody in preparation for the deposition?

A. No.

Q. You didn't meet with counsel?

A. I did, yes. I did meet with Lynne, and she described the general framework of the deposition, and gave me some of the same instructions that you gave me at the beginning of the deposition.

Q. When was that meeting?

A. On Sunday evening when I arrived, after I arrived.

Q. About how long did it last?

A. I think less than -- less than an hour.

Q. Did you and Lynne talk about anything else?

A. No, I don't think so.

Q. So no advice for particular points to stay away from or to address in the deposition?

A. No, definitely not.

Q. And then last night have you had any conversations with Lynne since the deposition ended?

A. No. The only thing that she asked me to do was these Post-Its.

Q. Sounds good. Also very helpful. Thank you.

So I'd like to pick off where we left off yesterday, but we were talking about your discussion on page 4 of the expert report --

A. Okay.

Q. -- of the state school, or the most effective role --

A. Right.

Q. And I wonder what the research is that supports your view of the most effective role that the state can play. And I'm sorry, let me step back from that even.

When you're talking about the most effective role that the state can play in your expert report, are you talking about, especially about California, or are you talking about any state?

MS. DAVIS: In this section?

MS. LHAMON: Throughout the expert report.

THE WITNESS: Right. I think the answer is one that I gave you yesterday. It's a combination of the two. I had California particularly in mind, and some of the constraints that California faces and opportunities that California has given its somewhat different educational structure than other states, but many of these things also do apply to other states.

You would probably write them somewhat

differently for other states, because they're different constraints and opportunities.
BY MS. LHAMON:
Q. Okay. And thank you. Then could you tell me what the research is that supports your view of the most effective role that California could play?
A. Well, I think I tried to say yesterday, there are two things. One, I don't try to decide what I think state schools are. I really don't think that's the right role for an expert to play.
I think we should try and understand what goals voters and residents and legislators annunciate or articulate. So that's part of the -- that's not research based. That's part of trying to understand the goals that have been articulated. And that's part of what this is based on.
And the other, the evidence that this is based on is evidence about the efficaciousness of input policies, evidence -- so it's studies -- there are a variety of studies, some of which I've just discussed on a previous page about the efficaciousness of input policies, evidence of the efficaciousness of accountability, and that's -- that's pretty much it.
Because really, all that I'm saying here is, I'm trying to articulate the goals that I think

California has, and then I'm trying to just to make some statements about the evidence.
Some of the evidence that I would rely upon would be evidence similar in quality to some of the evidence I will just describe later on in the report.
So that's one of the reasons why we're going to go on to that evidence, or the reader would have been able to go on to some of that evidence.
Q. Okay. You just testified that in section 3.2, you were trying to articulate some of the goals that California has; is that correct?
A. Yes.
Q. And where did you look to figure out what those goals were as articulated in section 3.2?
A. Well, for instance, if you look at the Serranotu decision in California, the State Supreme Court articulates some goals about equal educational opportunities.
And given the fact that any school finance system would be potentially exposed to judicial review again, it is reasonable to think that goals that were articulated by the Supreme Court ones are possibly goals that one will tend to pay attention to.
In addition, California has had quite a lot of policy action on schools recently, both in drawing up

its accountability plan, in drawing up its curriculum frameworks, in reducing class size.
There are also some initiatives in higher education that sometimes describe California goals for its students.
In those -- in those policy discussions, or in the legislation that reflects those policy discussions, there is often an articulation of the goal that California students should learn to a high standard.
So I don't -- I think all that I am talking about here are two basic goals. One about equality and one about the average standard of performance or children reaching at least a minimum standard of performance.
To the best of my knowledge, those are not controversial goals in California.
Q. Okay. So you actually looked at the Serranotu decision to see what the Superior Court articulated as goals for California?
A. Yes.
Q. And when you say that California has had a lot of policy action, you've reviewed things like class size reduction and curriculum frameworks to figure what the goals are with regard to those policies?
A. Yes.

Q. Did you review anything else to familiarize yourself with the goals for education in California?
A. I mainly reviewed legislation and the supreme court ruling. There is a lot of other writing about education in California, some of it by think tanks, some of it by pundits, some of it in the media.
And, of course, I am exposed to a lot of that and I read it, but I did not purposely review it for writing this expert report.
Q. Okay. Thank you. Turning to page 5 of the expert report in section 3.4, the first sentence that begins, "Showing that inputs have a causal relationship --"
A. Yes.
Q. What is sufficient to justify state determination of input policies, as used in that sentence?
A. Okay. The sentence reads, "Showing that inputs have a causal relationship with performance is not sufficient to justify state determination of input policies."
And I think we ought to read it in the context of the next sentence, which I think there may be a typo -- no, there isn't -- "this is because a state can easily manage input less well in schools."

So what would be sufficient to justify state determination of input policies. Well, let us say that hypothetically, we could show that a particular school input had a relationship with students' achievement.

Then we would need to decide whether that input could be better managed by a local district or a state, if we wanted to decide whether to give the responsibility for managing that input to the state or to a local jurisdiction. So it's not good enough to show that an input has a relationship with student achievement.

You then need to go on to show whether that input is more effectively managed by the state, if you would like to allocate that responsibility to the state, or more effectively managed by local districts.

So there's a two part test. And that's all that I'm describing.

Q. And that's based on efficiency concerns; is that correct?

A. That's just based on logic, yes.

Q. And when you say it's based on logic, the logic here is based on efficiency, right? That it would be more efficient for a local district to manage some things for the state and other things would be --

A. If you could consistently show that input was

more efficiently managed by local districts than it was by the state, logically you would give that responsibility to local districts.

Q. So just to give me an example I could hang my hat on, we talked yesterday about tests as a kind of input; is that correct?

A. Yes.

Q. And I think you testified that it's beneficial for the state to make sure everybody takes the same kind of tests so that the state can monitor achievement by a standard that measures everyone; is that correct?

A. Yes.

Q. So that's the kind of things that are logically better for the state to manage?

A. Yes. And there -- I think there are several reasons to believe that the state is better at managing test purchasing, test distribution and probably even test choice, although I would like to be clear about that.

The state has great economies of scale in purchasing tests. If the state wishes to write state specific or curriculum specific, there are amazing economies of scale at that point in the state making one decision, and the state has lots of ability to distribute tests, especially if it also wants to have at

state level information, because then it doesn't need to ask all the districts to send the information, it has to all be retyped in.

And finally, if a state actually wishes to do comparison among school districts, there are clearly big economies of scale around the state, especially if the state's choosing one test for all. Otherwise, the state would have to be in the business of having to convert every district's scores.

Q. Is there nothing that you believe that the State of California should mandate that schools have?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I think there are already many mandates in the State of California for schools. And I think I could answer the question, should it have more mandates or less mandates, but many of the mandates that are in place are so basic or fundamental, it's really difficult to discuss whether or not they should be there, since there's no -- there's no question about whether -- there never has been a question about whether they should be mandated or not.

BY MS. LHAMON:

Q. Like what kind of things are you thinking of?

A. That districts have to have schools.

Q. Right. So that's the kind of thing, just, it

makes sense, you have to mandate that --

A. It's a mandate that has been in place for so long that it would be difficult to contemplate what exactly would happen if a district were to just decide not to have any schools. It would also contradict very basic mandates, like compulsory education.

Q. Okay. Do you recall having stated, and if you don't, I can show it to you, if you like, in sum or substance that the state has a real responsibility that everyone gets a good education?

MS. DAVIS: Is that in a report?

MS. LHAMON: It's not.

MS. DAVIS: Okay.

THE WITNESS: Is that a quote?

MS. LHAMON: It is. And I'm happy to show it to you, if you'd like. Would you like me to?

THE WITNESS: Yes.

MS. LHAMON: Let's mark this as Exhibit 4.

(Deposition Exhibit 4 was marked for identification by the court reporter.)

BY MS. LHAMON:

Q. Professor Hoxby, you're welcome to look at as much of this article as you like. The quote I'm referring to is the very last line on page 4.

And my first question then, now that we're

looking at the exhibit, is, first do you recognize what is Exhibit 4?
A. Oh, yes. I do recognize Exhibit 4.
Q. And can you tell me what it is?
A. It is, I believe it is a photocopy or a web version of an article that was in the Austin American Statesman originally.
Q. Okay. Thank you. And would you like to take a moment to look at the whole thing, or shall we just --
A. I have read the article in the past.
Q. Okay. Thank you. Is the quote attributed to you on the last line of page 4 of Exhibit 4 something that you remember saying in sum or substance?
A. No, actually.
Q. Okay.
A. It's possible.
Q. Okay.
A. But I don't have a particular memory of saying that.
Q. Okay. Does the quote sound like something that you think?
MS. DAVIS: Vague and ambiguous.
BY MS. LHAMON:
Q. Do you believe, quote, "the state has a real responsibility that everyone gets a good education"?

MS. DAVIS: Vague and ambiguous.
THE WITNESS: I would if in the context here is the context of changing school finance in Texas, the State in Texas has a clear constitutional responsibility that is written into the Texas state constitution, that says, and this is not a direct quote, but a paraphrase, that this state has a responsibility to ensure that every child in Texas is able to get an efficient education so as to participate in the full life of Texas.
I believe I was probably either paraphrasing or attempting to quote that key line from the Texas state constitution, which begins the education clause of the Texas state constitution. So I think I was merely attempting to quote the Texas state constitution.
That is the key line that has been used in Texas again and again, when school finance systems have gone to the supreme court, that is generally viewed as the schools, the system of school finance is a system in which the state is fulfilling the role given in the state constitution in a manner that is efficient, which is also required by the state constitution.
So here I -- I was just quoting, I think, the constitution.
BY MS. LHAMON:
Q. Sure. I should have told you this yesterday,

also. There are no tricks here. I'm showing you -- I want to know if it's something you think. If it's not, that's good. So I actually didn't mean to invoke the vagaries of Texas law in this litigation.
I am curious if you have a view about whether in California, the state has a responsibility towards educating its students.
A. I don't think it's the role of someone like me to make decisions for a state. It is clear that in the -- in the most recent major supreme court decision in California, the Supreme Court of California has outlined a set of goals for California. I take those goals as given.
I do not attempt to have my opinion supplant that of state supreme courts. I would rather find out what they think they are trying to do, and then give them alternative ways of attempting to implement that, but I'm just not a person who thinks I ought to be setting goals for states.
Q. That makes perfect sense to me. And to make sure I understand that last answer, then, is it your view that the California Supreme Court has articulated a role for the state, whatever that role may be, with respect to education?
A. Yes, I think it has, but I would say that

all -- everyone else in this room would be better at describing the role that Texas -- I mean, the California Supreme Court has articulated. I'm not an attorney, and I'm certainly not a constitutional attorney.
Q. Okay. Thank you. Taking the point that you're not an attorney, and I'm asking about your expertise in understanding a state rule based on your understanding of what prior decisions have already been laid out, do you believe that to fulfill a state's responsibility, the appropriate role for the state, based on your expertise, is to be a fair funder?
MS. DAVIS: Vague and ambiguous, calls for a legal conclusion.
THE WITNESS: Yeah. First of all, I have no idea what the word "fair" means in this context. I believe that this state's Supreme Court of California has made decisions which attempt or appear to attempt to equalize all spending in the State of California.
And I would go no further than that, because I'm not going to interpret a word like "fair."
BY MS. LHAMON:
Q. Thank you. And that's actually fair. Let's take those words out, and just ask you open-endedly, what is your view of the appropriate role in fulfilling what you understand to be what the state supreme court

has assigned to the State of California with respect to California?
MS. DAVIS: Same objections.
THE WITNESS: This is a very broad question. I think if the state Supreme Court were to tell me that it was to achieve a particular distribution of spending in the state, I would be prepared to tell it some alternatives for achieving that.
I am not prepared to choose the distribution of spending for the State of California, nor am I prepared to say, given the sometimes vague language in Superior Court decisions, that I know what distribution of spending that translates into for them, but I would be prepared to say if you want to have this distribution of spending, I can try and -- could try to give you plans that would implement that distribution of spending.
BY MS. LHAMON:
Q. I guess I'm just trying to figure out if its your understanding that the role assigned to the State of California with respect to education is limited to questions of funding. And I don't mean that pejoratively.
MS. DAVIS: Same objections.
THE WITNESS: It really is -- it really depends what your state Supreme Court and what your legislature

want to do. I just don't -- I'm not going to opine on a subject where I'm not really an expert and, frankly, where I think they could change their opinions about what they think the state's role is tomorrow.
I try to read what they say and to understand what appear to be their goals, and I try to read them in a way that's common sensical, not necessarily the way in which a constitutional expert might read what they say.
BY MS. LHAMON:
Q. Okay. Well, going back to page 4 of your report, where you've talked about the most effective role the state can play, and you've testified that you're basing that on your understanding of existing law in California, when you say that part of the most effective role for the state is to ensure that each school has a relatively equal level of resources, that's the first bullet point on page 4 --
A. Yes.
Q. -- do you mean that it is most effective for the State of California to have centralized school financing to go about ensuring that?
A. No, because that can be achieved in a variety of different ways. If a state has decided that it wishes to have a relatively equal level of resources or spending in each school in the state, there are a

variety of ways that that can be achieved.
If that's the role -- I believe that that was one of the goals of your state Supreme Court. It may be my misinterpretation, but that is my belief.
And it is also my belief that your legislature would like to see that spending is used efficiently in schools in California. Again, that's a belief based on reading legislation.
There are a variety of ways to achieve equality of resources or relative equality of resources. And centralization is one of them, but it is only one of them.
Q. What are other ways?
A. Centralization is the crudest way of achieving equal resources. It basically says, we will get rid of the fiscal side of local districts, there will essentially be no fiscal districts at the local level, everything will be done at a state level.
If, then, the state chooses to give out its resources equally or relatively equally, it will, of course, achieve quality or relative quality.
So it is simple, it has that virtue, but that is the main virtue of pure centralization.
Alternatively, the state can selectively intervene and choose to give more resources to districts

that are very poor and give fewer resources to districts that are richer.
By doing that, the state can achieve relatively equal level of resources without actually intervening much in most of the districts in the state.
So the degree of centralization could be very small, and yet the state could achieve a quite equal distribution of resources. And the degree to which centralization is required is really just going to depend on the income distribution of the state in such cases, but centralization in and of itself is just one particularly crude way of achieving the equality.
Q. And is that the only other alternative?
A. Well, there is a group of other alternatives. Under that heading there will be literally hundreds of different plays that one could implement in a state. So it is rather sort of a broad category of types of interventions.
Q. At the bottom of page 4, you note that part of the most effective role the state can play is to provide incentives for schools to use their resources efficiently by monitoring their performance on state-wide achievement tests, et cetera. Do you see that?
A. Yes.

Q. And that was in bullet 2. How does the ability of monitoring performance on the outcomes you outlined provide incentives for schools to use their resources sufficiently?

A. Well, let's take a straightforward example. Suppose we have two schools, both of which have been given the same per pupil budget by the State of California. And that budget can be used efficiently or inefficiently, possibly.

If the state monitors the performance of the schools on a variety of outcomes that the state cares about, the state will be able to deduce how efficiently these two schools are turning their budgets into the outcomes that the state has decided to monitor.

Now, what we're going to find out is how efficiently the schools are producing the particular types of performance that the state cares about. There may be other outcomes, but that -- the state does not care about that. It is not important, but we will find out how efficiently the schools are turning their resources into the type of performances the state is monitoring.

If it is embarrassing for the schools to not have good performance, if parents the state cares about or the school cares about will move away if the school

does not do well on these performance measures, or if the state has either explicit or implicit rewards or sanctions, then the school will have incentives to use its resources efficiently to produce the particular measures of performance that the state has decided to monitor.

Q. So, is it correct, then, that the state has to do something in addition to monitoring the outcomes that you outlined to provide the incentives?

MS. DAVIS: Vague and ambiguous.

THE WITNESS; I think the answer to that is certainly no, based on the evidence. Somewhat surprisingly, mere disclosure of performance appears to create relatively strong incentives for schools by itself.

We don't really know whether this is because school officials just don't like to be embarrassed, or because there are consequences for parents moving in and out of schools.

We know that there's at least some incentives that are created purely by the publication of school results, but the incentives that are created just by publication may be relatively weak compared to the incentives that could be created if the state were also to use a strong system of either implicit or explicit

rewards or sanctions or interventions.

For instance, a state could intervene in low peforming schools and do dramatic interventions. That might be a strong explicit combination of a sanction and a remedy.

We do not have a very clear idea of what will happen if a state provides very strong explicit rewards and sanctions, simply because most states do not provide very strong rewards or sanctions. Sanctions and rewards that they provide tend to be weak, even today.

BY MS. LHAMON:

Q. That last answer, that is based on your research on the system in the fifty states; is that right?

A. Yes. For instance, it is very unusual to find that the financial reward or sanction for a school district would represent more than a few percentage points of its per pupil spending. There are no sanctions that represent, say, 25 percent of per pupil spending.

Q. When you say there are no sanctions, you're referring to none of the states?

A. I do not believe there are any of the states that have sanctions of that magnitude.

Q. In the same sentence that we've been discussing

on the second bullet under 3.2 on page 4 of your expert report, you refer to other outcomes important to Californians.

Do you have specific other outcomes in mind when you use that phrase?

A. My understanding is that from discussing the accountability system with some Californians who have worked on committees that built the accountability system, that it is hoped that -- or that it is believed that there are some other outcomes that Californians would possibly like to see in the long run.

I do not know whether their views are representative, but I didn't wish to exclude that, other outcomes that -- since that has been suggested to me, that other outcomes.

Q. Who are the Californians that you're referring to having spoken to?

A. The person I am thinking of -- I'm trying to get this right. I'm not a good person with names.

Q. If you know the position of the person or -- that's fine.

A. I wonder if it would be possible, could I fill in the name later, part of the name?

Q. Yes.

A. He would be mad that I couldn't remember his

name. Don't write that down. That's why I wanted to come up with the name, so that I'm not -- I'm just terrible with names.

Q. There have been times I can't remember my brother's name. Don't worry about it.

A. Evers is his last name, Bill Evers. Bill Evers, E-v-e-r-s. I'm so glad I came up with it. Bill Evers. He's a person who's worked on several state committees related to accountability. And he has -- I've had several discussions with him about the sorts of discussions they had in those committees.

Q. Okay. Do you know if he's a professor or if he's a state legislator?

A. He is an education policy person who has a position at the Hoover Institution, but has also served, I believe, in a number of state capacities in the past. It's a long history of serving in the State of California.

Q. Do you remember what other outcomes important to Californians that he described to you? And I appreciate that you're not sure those outcomes are representative of the views of Californians.

A. I think in the long run, people would like to look at especially college attendance and college completion, labor market outcomes like wages and

employment, and possibly some health outcomes for California, because the state does spend a lot on health care. Those could be things like whether mothers use prenatal care during pregnancy.

Q. Thank you. When you use the phrase "other outcomes important to Californians" in your expert report on page 4, I take it, then, you didn't mean that there were specific outcomes, you meant Californians will decide, and the state has a role with respect to those outcomes; is that correct?

A. My understanding is that in most states, the way accountability works over a long period of time is that voters, parents and legislators begin to feel that their accountability systems are not picking out all the outcomes that they care about.

And they gradually make an effort to measure some of the other outcomes that they care about. This process is organic, and occurs over a period of time, and it takes time typically for the state to gather the resources to track other outcomes.

For instance, right now California could make an effort to start trying to map students to their college performance. It would not be impossible, but right now the California Department of Education, as far as I know, is not doing that, and has not assembled the

data to do that.

Q. Okay. How would -- do you have a view about how the other outcomes you identify as a category would be determined?

MS. DAVIS: Calls for speculation, vague and ambiguous.

MS. LHAMON: I'm just asking for your view.

THE WITNESS: Would be measured or would be determined?

MS. LHAMON: Identified what the outcomes are.

THE WITNESS: Oh, I can tell you the common ones. One of the first things that California might look at is, it might track students by their Social Security numbers and see whether they attend college, see what type of college they attend, whether they persist in college, whether they complete a degree.

So those tend to be the outcomes that people look at; attendance, type of college, completion. For labor market outcomes, people often look at whether -- again, Social Security numbers are used to link people, and people look at whether a person will have a certain amount of employment that would show up in the unemployment compensation system for the state.

For health outcomes, as you may or may not know, California has extremely good health records at

this point. It's basically keeping track of anyone who uses public health at all, and is also keeping track of hospital records.

So, again, it could tie -- it has the ability, depends on a lot of data work, to tie, you know, schools to their students' later use of health resources.

Typically people look at things like births. That's a big thing, is the use of prenatal care, measures like that, typical measures.

BY MS. LHAMON:

Q. Thank you. I meant to ask, actually, a slightly different question, which is whether you have a view about how Californians would agree on or come to select which outcomes should be monitored.

MS. DAVIS: Same objections.

THE WITNESS: That's -- it just happens in different states differently. I mean, it's really a matter of people talking to their legislators.

BY MS. LHAMON:

Q. Thanks. Similar question on page 1, you refer to the judgment of Californians. It's the first sentence of the third paragraph.

A. Right.

Q. And I wonder if you know how one can go about determining what the judgment of Californians is related

to public education.
A. By this sentence, which says -- I'll read the part that's relevant -- "for the judgment of Californians who have, through their legislators, put in place California's current set of finance accountability and input management," I think that's part of the sentence that's relevant.
We have a political system in the United States that allows voters to express their opinions about things at the polls; and partially by electing legislators who articulate positions, and partly by referendum in California. And that is the system by which we allow voters' judgments to be expressed politically.
I think we all know that equally well. So that's all that I meant.
Q. Okay. Thanks. In the same sentence, you identify the plaintiffs. And so actually, I should have probably asked you this yesterday, but whom do you understand the plaintiffs to be?
A. I understand the plaintiffs to be -- the plaintiffs, literally the plaintiffs in the case as represented by the documents which I've received. It is possible, of course, that those are not their views, but it has been represented to me that the documents I've

received from their experts and in the plaintiffs' liability --
Q. I'm actually not criticizing your read of the plaintiffs' view. I actually just mean, who are the people, the plaintiffs?
A. They're students.
Q. California public school students?
A. Yes. I don't know them particularly.
Q. That's fine. I'm not asking you to identify Susie, John and Joe, but -- staying on page 1, I see the last sentence before section 2 on page 1 of your expert report is, "The system is, after all, the work of many commissions, committees, experts, legislators and consultations with parents and other parties with an interest in education." Do you see that?
A. Yes.
Q. In that sentence which commissions are you referring to?
A. Well, my understanding is that -- I am not an expert in California politics, but my understanding is that in the process of choosing a new accountability system and choosing new curriculum frameworks, that the legislature and the governor established a set of commissions to think about, for instance, the mathematics curriculum framework or the English

curriculum framework, the history curriculum framework;
That the State of California I know consulted a variety of experts about how to set up its school report card system, about which tests or testing companies were likely to produce tests that would match the curriculum frameworks in California.
I know that they consulted, they had committees in which parents were allowed to testify about aspects that they would like to see in the accountability program.
So it is that sort of consultation committee and commission work that I am referring to. It's a relatively standard process across states.
Q. And on what do you base your knowledge that all of these things happened?
A. In part, when I was writing a study called "The Cost of Accountability," I read the entire budget related to accountability in California. And many of the line items in that budget are for things like this.
They are for consulting an expert, paying for committee meetings, paying for methods by which parents might articulate their views or gain access to materials on the web site so they knew what was happening.
So it's fairly clear that some of these activities were carried out, or at least financed.

Q. Paid for?
A. They were paid for, yes.
Q. Did you read any of the minutes of the parents' testimony, or review any of the commission records or read anything that experts have recommended?
A. I have read articles that synthesize some or review some of those meetings and reports. I have not actually read the minutes of meetings.
Q. Okay. And which articles are you referring to?
A. There are a couple of very nice articles by this same Bill Evers, in which he describes, for instance, the process of choosing curriculum frameworks in California.
Q. I have a series of questions about this, and maybe we can cut it shorter if I do it this way. If it doesn't work, that's fine, but I take it from your last few answers that you haven't read independent committee reports themselves? Or let me step back from that.
I take it from your last answer that the basis for your view about the committees and the parents' testimony and the expert consultation was reviewing the line item budget and reading the Bill Evers articles; is that correct?
A. Yes.
Q. Thank you. That saved us a page.

Looking at page 2 of the expert report, you write -- it's now in the paragraph that it's numbered 2 above 2.2, midway through the paragraph there's a sentence that begins, "If the state is to succeed by pursuing input policies, it must establish that the relationships between inputs and student performance are causal." Do you see that? It's the bottom of the paragraph numbered 2.

A. Yes, I do see that.

MS. DAVIS: If you need to read around it to put it in context --

MS. LHAMON: I should say that also, at any point if you see something in a report or a document, if you want to read more than I have pointed you to, you should feel free.

THE WITNESS: I will.

BY MS. LHAMON:

Q. Why is it necessary for success in pursuing input policies to establish that the relationship between input and student performance are causal?

A. Because we know that in many cases, well intentioned input policies that were based on the mere assumption that inputs were related to student performance have been counterproductive.

It is not -- in no type of scientifically based

or evidence based policy work can you ignore the establishment of there being a causal relationship between policy and performance or outcomes.

This is, you know, obviously illustrated with health. In health, there have been studies that claim to find that certain behaviors or certain treatments had a good effect on people's health care.

In many cases those behaviors turned out not to have causal relationships later with people's outcomes. And when doctors had changed policies and tried to make many people switch their behaviors, they actually created counterproductive work.

This same thing can be true in schools. For instance, teachers are particularly good examples. When you decide that you need to raise the credentials that a woman or a man needs to have to become a teacher, there are two possibilities.

One is that by raising the credentials, better people will become teachers, people who are going to be better at teaching children to learn, or it could be that many people who are good at teaching children to learn are talented people with other exciting career prospects, and that they will be put off by the notion of having to spend a long time gaining a credential that is not useful outside of teaching.

Therefore, it is not obvious, whether by raising the amount of, say, education that a teacher needs to have, you will put more good teachers into classrooms or put fewer good teachers into classrooms.

If I do not establish that causal relationship between raising the barriers for teacher certification in a state and student performance, and I merely rely on correlations, I could very easily make teachers worse in a state.

And I could have all of the best intentions, but if I have not established the relationship is causal, I might easily advocate policies that are going to be counterprotective.

This has happened many times in education. Many policies have been put into place in education that have not been based on evidence, and later we have seen that these policies have to be taken away, often with big cost.

So that's why we need to establish that the relationships are causal. It's -- good intentions are not enough in education.

Q. I take it from that answer that your view is that if -- that unless one can establish through evidence the benefits of an input policy, the input policy should not be implemented; is that fair?

A. When we -- whenever we are changing policies, especially if one is changing a policy based not on the widespread will of the people or the voters, but based on claims of evidence, I believe the burden of proof for evidence that that policy works is on the people who are recommending the policy change, yes.

You could imagine having a policy change because the voters just like it. They don't necessarily think it's going to raise student performance. In that case, you could change the policy just to make people happy, but if the reason that the policy is being changed is that there is a case being made that it will raise student performance, than the burden of proof should be on the people who are advocating that policy, yes.

Q. Okay. I actually was not asking a question about the assignment of burdens, because your next sentence actually assigned that burden to the state, which I assume to be a mistake.

A. Well, I suppose the state must consult people who would help it establish that the relationships are causal.

Q. Okay. What I intended to ask was whether it's your view that, regardless who the burden -- who bears the burden to establish the evidence, that an input

policy should not be implemented unless there is evidence that establishes its benefits.
MS. DAVIS: Asked and answered.
THE WITNESS: I didn't hear that.
MS. DAVIS: I said, asked and answered.
THE WITNESS: Yeah. I think that's the same question.
BY MS. LHAMON:
Q. It is the same question, but I didn't get an answer to it. Your last answer talked to me about who bears the burden, and why you've assigned -- you believe the burden to be assigned on one party and not the other, which is interesting to me, but not responsive to whether you believe that an input policy should not be implemented unless there is evidence that establishes its benefits.
MS. DAVIS: Mischaracterizes her testimony.
THE WITNESS: I think what I tried to say, and I'll try to say again, is that we have a status quo about the level of inputs. I think changes in that status quo that are supposed to be based on evidence should be based on evidence that establishes causal relationships.
I do not think that we should eliminate all inputs that are in the current status quo unless we can

gather a whole new set of evidence about them.
I think the point I was trying to make was, given the status quo, do we need evidence to change the status quo; and I think, yes, the answer is yes.
BY MS. LHAMON:
Q. Thank you. And that is responsive, and I appreciate it. I have one follow-up question.
In that last answer you said that you think changes to the status quo that are supposed to be based on evidence should have that evidence.
I'm just trying to find out if you're drawing the distinction between changes that might be proposed to the status quo that don't need to be based on evidence.
A. Some changes to the status quo might be based on grounds that are ethical or moral. For instance, we might decide that we want children to get ethical education in school, and that might be the will of the people in the state as expressed through their legislators; and the people might not have any notion that this was going to raise achievement in math or reading or history or anything like that.
They just might decide, this is something the school should do. Seems to me perfectly reasonable in that case.

Q. I see. Thank you. Returning to the question of whether particular inputs, such as teachers or textbooks, matter for student performance, collecting relevant data is essential to establishing or not establishing that link; is that correct?
MS. DAVIS: Vague and ambiguous.
BY MS. LHAMON:
Q. Collecting that data is essential to establishing whether there is a link; is that correct?
MS. DAVIS: Same objection.
THE WITNESS: It depends on the type of data, actually. We have quite a lot of data on school inputs. Not all of it is useful for determining whether or not there is a causal relationship between input and students performance.
And let me giving you an example. Let's say that I knew exactly what textbook budget every school had in the country, and I also knew -- this would be quite amazing, but I'm going to assume -- I also knew exactly the condition of every textbook in the country, and whose hands that textbook was in for every 24 hours of the day of 365 days of the year, whether it was in the child's hands or the teacher's hands or in a storeroom. And I knew student performance for every child in the country.

This might sound like paradise for a researcher, but the fact is that unless I had a way of figuring out what would happen if a child who did not have a textbook were to receive a textbook, having all of that data would not be very helpful.
It would be much more helpful for me to have one experiment where children were given more textbooks when they would have otherwise had few textbooks, rather than just having comprehensive data, but no way of figuring out whether there were any textbooks that were distributed except based on students' own family background and things like that.
It is not the quantity of data that is useful necessarily, it is a combination of data and a source of policy variation, of policy experiment, an experiment that helps us identify the effects of input.
So data in and of itself is not useful, and it can even be somewhat distracting. For instance, knowing about the condition of textbooks might appear to tell me mainly about textbooks, but might actually be revealing a lot about the home conditions of the student I was studying. So I might, in fact, end up attributing to textbooks something about students' homes.
Data by itself is not useful unless there is a critical and logical empirical process applied to data.

BY MS. LHAMON:
Q. So, if I understand that correctly, the important -- an important piece you need in data analysis of this type is to be able to analyze the change in status?
A. Right. You need to be able to analyze a change in status, and you need to be able to analyze a change in status that is not merely the result of people having created the change in status for themselves.
For instance, if we were to see that richer parents bought their children more expensive textbooks, it would be hard to tell whether that was the effect of having richer parents or the effect of having better textbooks.
If we saw a helicopter fly over school districts in California and randomly drop textbooks on some of them and not on others, that would be very helpful for determining the effects of textbooks.
Q. I want to ask you about a sentence that -- you've written an article, and I'm happy to show you the article, if you'd like. Let me tell you the sentence, and if you recognize it and can explain it -- you've written in the article, "The effects of class size on student achievement systematically is of -- may be obscure without the variations of inputs being

exogenous." Does that sound familiar to you?
A. Yes, it does.
Q. Would you like to see the article?
A. No.
Q. I just am hoping you would tell me about what "exogenous" means in that sentence.
A. Exogenous, the definition of the word exogenous, when used in a context like this, is a change in policy or a change in inputs that is not correlated with a change in other determinants of student achievement.
So it is any change in policy, or any change in inputs that is not correlated with other things changing that would affect student performance. So that's the meaning of the word "exogenous." It has a technical meaning.
When I said "uncorrelated," I meant literally that the variation in input was orthogenal to or had a correlation very close to zero with variation in, say, student background or any other thing that might be going on changes in the economy.
Q. I had looked up the technical definition, and it didn't help me, so I really appreciate your explanation. Thank you.
A. It's really just a way of saying, we need to

sort out what happened when the inputs changed, whether it was from other coincident changes that might have occurred at the same time.
Q. Okay. Thank you. I can turn to a whole other section of your report. On page 14 of your report, the second paragraph, the single sentence, it reads, "The most effective state policy for schools will be those that not only improve schools, but also induce parent and neighborhood to be more supportive of their schools." Do you see that?
A. Yes.
Q. What are state policies for schools that not only improve schools, but also induce parents and neighborhoods to be more supportive of their schools?
A. Well, we have limited evidence on this question. What I think we have good evidence on is the state policies that seem to make parents and neighborhoods less supportive of their schools.
We have less good evidence on state policies that will make parents and neighborhoods more supportive of their schools.
Let me tell you about the evidence that's best first, and then I'll tell you about some of the evidence that's more speculative.
There is strong evidence that parents and

non-parent residents of a district participate more in their schools and are more likely to vote for school spending, whether it's in the form of bonds or school levies, in areas where there is a higher degree of local financial control.
This result is, I suppose, not surprising. It means that local taxpayers' dollars are being controlled more by them, and it's not surprising that they would possibly take more actions to see how their dollars are being spent. So that's one area where we have, I think, quite good evidence.
Most of the evidence is not based on states raising the level of local control, although sometimes it is. It's more often based on states getting rid of local control and seeing a consequent dip in parent and voter support for school spending, but the evidence is based on both types of changes.
There is more speculative evidence, some of which is due to me, but I would, myself, would say it's more speculative, about the effects of school choice, not the effects of modern school choice plans like charter schools or vouchers, but the effect of this traditional form of school choice, in which people get to choose a school by choosing their neighborhood.
When people have more ability to choose their

school by choosing where to live, it appears that they are more involved in their local schools. This may be simply because they made a more conscious choice of where to send their children to school.

And that evidence is probably as good as it's going to get, but there is not a lot of evidence on that point.

There is also I think what I would describe as speculative evidence, that when states make an effort to ensure that schools provide opportunities for parental involvement through things like school board elections that are really free and fair, that that makes people more involved; that schools that provide opportunities for parents to meet at the school at times that are convenient to parents are things that involve parents more.

Most of this evidence is, frankly, not very strong. I think these are not terribly controversial policies. So perhaps you might enact -- you might think about having a policy like that even on very weak evidence.

For instance, changing the times of parent/teacher meetings to be at a time more convenient to parents might be a relatively easy change to make, even if you didn't have a great deal of evidence. It

isn't a controversial policy.

Q. I take it, then, that because evidence -- most of the evidence as you've described it is speculative about things that a state can do to ensure parents and neighborhood resident involvement, that you don't have specific state policies in mind that a state should employ to improve schools, but also induce parents to be more supportive of their schools?

A. No. I do have specific state policies in mind, but the policies I have in mind are ones that a state would want to stay away from, as opposed to enact anew.

Q. Thank you. You don't have specific policies in mind that the State of California should try to employ, not stay away from?

A. Well, all policy is, you know, either look at policy as a negative or a policy, policy, right. So you could say, for instance, that restoring some degree of local control in California would be a policy that would likely raise student, parent involvement. That's a policy.

It is not as positive a policy as something that's completely unheard of or completely fresh, but it is, indeed, a policy.

Q. Thank you. And you're absolutely right. So I should get your list of what you think the state should

stay away from, or if you decide to put it positively, that's fine, too.

MS. DAVIS: And do you mean California?

MS. LHAMON: I do mean California.

Q. So I'm interested in, when you say on page 14, in that sentence that describes "most effective state policies for schools would be ones that improve schools but also induce parents in neighborhoods to be more supportive," which policies do you have in mind?

A. Almost any policy that affects the degree to which input decisions are made centrally, as opposed to locally, is going to affect parent involvement.

And it was that reason why I brought up this particular point. For instance, if parents have -- if parents and local residents have almost no role in making decisions about how teachers should be hired in their schools, they are less likely to be involved in parent/teacher conferences, parent/teacher associations, et cetera.

To the extent that they feel that the teachers are people who they have an investment because they have helped to make basic policy about hiring decisions, they will likely be more involved with those teachers.

So that's an example. The same thing could be said of even facilities decisions. Parents are often

very interested in what school facilities are like, and if they feel that they were involved in making decisions about how buildings should change, they are more likely to show up at the events for which those facilities were designed.

Q. Okay. And for those two examples, first taking the first one, that if there's no parent involvement at teacher hiring, then parents are less likely to be involved in parent/teacher conferences, for example, is there research support for that position?

A. Yes, there is. It's mostly based on types of schools that are either very -- that are either locally controlled or things like charter schools, for instance. In some charter schools in the United States, parents have played a big role in -- parents never hire teachers, I should be clear about that.

What parents could do is have discussions with administrators about the sorts of teachers they would like to hire, and how they would like to make decisions about that.

In some charter schools parents are actually on the committees that interview prospective teachers, or they may be on the committee that looks at the guidelines for hiring teachers.

And parent participation in teacher related

activities does appear to be higher in those schools. That's the sort of evidence that we have to rely on.

Q. Okay. In that last sentence, when you referred to locally controlled schools, were you referring to schools that had local funding?

A. Well, no. Because this is not an issue about local funding. This is an issue about how much the school gets to control its own hiring policy.

So that's what I was -- when I'm thinking about local control related to teachers, I'm thinking about whether a school district has the ability to control its teacher salary schedule, whether it has the ability to control the types of teachers it hires.

So that would be affected by mandates about credentials, it would be affected by mandates about whether a school has to hire teachers, say, who may have been let go by other schools in the district, might be affected by union work rules in the state.

So it would be -- the question would be how much locally does the school get to control its teacher hiring. And that would not largely be about whether it's a local control of finance.

Q. And which kinds of states -- which states have these kind of local control schools?

A. Well, it isn't a yes or no type of thing.

There is a spectrum. Some states have -- many states have minimum state teacher salaries, although they're not equally binding in all states. If we were to set a minimum teacher salary at the minimum wage, that wouldn't make any difference, because it wouldn't be binding.

So there's a spectrum on teacher salary scales, how much latitude districts have. There's a spectrum on teacher credentials, whether a district can hire a teacher who, say, does not have a master's degree in some education program in the state.

And that is really a spectrum. It is not an up or down thing, especially because districts can usually get a certain number of exceptions. And the number of exceptions is important in determining how binding this is.

Typically states with higher unionization have more union work rules about how teachers are assigned to schools. So we can say that generally that states like New York or Rhode Island, that have very high degrees of teacher unionization, tend to have more union work rules about assignment of teachers to classrooms. But, again, it's a spectrum. It's not a yes or no thing.

Q. And the research that you've pointed me to that's based on locally controlled schools and charter

schools, does it control for that spectrum among the states in terms of that local control?

A. That's really what it's looking at, is trying to look at differences in state policies about the degree of local control that schools would have.

Q. And what is this research?

A. There's a variety of research on it. Some of the good research is by Michael Podgursky and Dale Lowe, but there's -- I just would have to come up with a series of other names based on really looking down my list of -- this is not an area in which I work a tremendous amount, but some of it is actually here in the report, because I have looked at things like teacher minimum salary scales, things like that.

Q. So the centralization index, is that what you're referring to?

A. Yes.

Q. And that's also support for the example that you gave, if there's no parent involvement in teacher hiring, then parents will -- were less likely to be involved in parent/teacher conferenes?

A. Yes. In fact, if you could --

Q. Do you want to point me to --

A. Well, if we look at the centralization index, one of the things it contains is, for instance, whether

there's a minimum teacher salary scale.

And I could have done the graphs that are on page, say, 18 based on just that particular part of the index. I was trying to be more general than that, but I could have, on the bottom, put how binding the minimum teacher salary scale was in the state and scores. And it would not look terribly different than these graphs.

Q. I see. Okay.

A. But it's one of the key components of that centralization.

Q. The ability to have a voice in teacher hiring is one of the key components?

A. Well, teacher salary scales.

Q. Teacher salary scales, okay. Thank you.

On the spectrum of states, I'm trying to figure out how to ask this question.

On the spectrum of states' policies that affect the degree to which -- well, on the spectrum of states' policies that affect parents involvement in the schools, where is California in terms of encouraging parents' involvement?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I think the point that -- I was trying to make this point directly in my report. In fact, in genearl, I would say that I was trying to make

statements that I think were supported directly by the evidence in my report, rather than supported by other people's studies.

I have a belief that the people reading an expert's report should be able to look at some of the evidence for themselves and make judgments for themselves. If you're only referring to studies that they don't have, it's difficult for them to do that.

So I was trying to look at that here in the report. And there is some direct evidence on parent involvement. And centralization, for instance, on pages 23 and 24.

And you can see that if we look at measures of centralization, California is a -- you know, is about in the middle of the states. So there's some states that are more centralized and more states that are less centralized.

Centralization is a good index of how much California is encouraging parental involvement. It's not a perfect index. You might also want to look at some of the sub-measures that go into that centralization index.

These would include things like whether California's teacher hiring, guidelines in particular. California has more hiring guidelines than most of the

other states here, in fact, apart from Connecticut. Connecticut may be the only obvious exception that brings to mind as a state that has significantly more guidelines about teacher hiring.

So California is relatively high on that. Does that answer your question?

You wanted me to rate how much California is encouraging parents' involvement.

I would say it's someplace in the middle or towards the lower end of encouraging parents' involvement. That's just a judgment on the basis of looking over a number of things, including things about teacher hiring and local fiscal control and other things that we think might affect parent involvement.

BY MS. LHAMON:

Q. And those are the things that go into your centralization index; is that right?

A. Yes. Some of them are and some of them are more difficult to measure across states evenly and objectively. So they don't go into the centralization index, but I do know about them.

Q. What are the things that are more difficult to measure and so didn't go into the centralization index?

A. For instance, I mentioned a moment ago the -- I guess the stringency of union work rules. Well, you

need to know something in detail about the typical union contract in the state and whether that union contract is enforced to have a sense of how teachers are assigned to schools.

And that requires, I'd say, some expert judgment. You have to have read a lot of teacher contracts. It's not an easy thing to summarize with a simple number. You can't look at a contract and say, this one is a five and this one is a three, but it does -- nevertheless, someone like me, who's read a lot of teacher contracts, we have a notion of how much control a principal would have over the teacher he gets to hire.

Q. Is there anything else that is in your category of difficult to measure but relevant for the incentives for -- I'm sorry -- difficult to measure across the states?

A. Something I have not put in here is typical district size. And that would probably be another issue. Some California districts are very large, some of the largest in the United States.

Q. Is there anything else?

A. I don't think there is another state policy I can think of that we haven't mentioned at all or that is not contained in some way in the centralization index.

Q. And you said that the stringency of union work rules can be difficult to measure without an expert judgment.

What is your expert judgment about the stringency of California union work rules relative to other states?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: California has a strong teachers union, and the California teachers union has been successful in writing contracts that the union likes. So it's going to have more stringent work rules typically than a state that has weaker unions. And California is easily in the top ten states in the United States in terms of union strength.

BY MS. LHAMON:

Q. And how does that status as being in the top ten states in terms of union strength affect incentives for parent involvement in schools?

A. Well, it really does it indirectly. If, for instance, principals will often complain about not being able to put the teacher they want in a particular classroom because the union will suggest that someone -- some other teacher must have that on the basis of seniority, sometimes that makes parents unhappy.

And parents always don't understand the union

work rule that says that a teacher with a particular level of seniority gets assigned to a particular group of students.

Parents then feel aggrieved, and are less likely to participate or coordinate with a teacher. So it happens. It doesn't happen directly, it's more an indirect effect.

Q. Does the fact that California is among the top ten or so states in terms of union strength negatively affect parent incentives for parent involvement for California schools, in your judgment?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I have no evidence on that question.

BY MS. LHAMON:

Q. So we just don't know?

A. I think we don't know. There are arguments on both sides. And unless you actually look at evidence, you wouldn't know. And I don't think there is such evidence.

Q. In your chapter "Families Matter Most," you wrote, "If the system is such that the school that can be obtained by even the best consumer parent is only slightly better than the one obtained by the worst, parents will not have much incentive to alter their conduct." Is that familiar to you?

A. Yes.

Q. Would you like to see it?

A. No.

Q. I'm just hoping you can explain that concept to me.

A. I think a good analogy that perhaps will work for people are restaurants. Suppose that all restaurants were about the same in terms of their offerings; they all had similar menus and similar service, similar decor.

Well, we probably would not invest a lot of time and energy in choosing a restaurant, and we might not have very much loyalty to a particular restaurant, because they would all be pretty much the same.

Parents are not that different. They have tastes for schools and beliefs about schooling that are easily as diverse as people's tastes for restaurants or beliefs about what makes a restaurant good.

If parents feel that they have an array of choices in schools, and that they can find one that suits their particular tastes, and that practices the type of schooling they believe in, they are more likely to put energy into choosing their school and have more loyalty to the school once it is picked.

Q. When you talk about more loyalty for the

school, what form does that take?

A. I think it usually takes the form of cooperating and coordinating with what the administration wants to do.

For instance, if a teacher can send home a project with all of the children in his or her classroom, and parents often have to play a role in ensuring that that project gets carried out, if the parent really believes in that type of project and thinks it's a good way to learn, they are more likely to make efforts that are either cooperative or coordinating.

So it's that type of, I guess you could call it loyalty, or you could call it mutual belief or something else.

MS. LHAMON: Okay. Thank you. Now is probably a good time to break for lunch.

(Lunch recess.)

MS. LHAMON: Back on the record.

Professor Hoxby, yesterday you brought me the license agreement for the NELS data.

THE WITNESS: Right.

MS. LHAMON: And I just want to make that an exhibit. So that will be Exhibit 5, and show it to your counsel.

(Deposition Exhibit 5 was marked for identification by the court reporter.)

MS. LHAMON: And just so we're clear for the record, the copy of the agreement that's Exhibit 5 does not have signatures on it or any identifying information filled in. It's just the blank --

THE WITNESS: I can give you a copy of the ones with the signatures on it. It will look exactly the same, except it will have my signature at the end, and it will have a signature from the U.S. Department of Education.

MS. LHAMON: And I accept that representation. I just wanted to know. Thank you.

Q. Turning to a new topic after lunch, when we talk about research methods, I take it from the description you gave me this morning of research that was good or better or even best research cited in the four expert reports that you reviewed last night, that you consider Eric Hanushek to be a good researcher.

A. Yes. I think he does very good research on the whole. He's a researcher who's been doing research on education for a long time.

So I think you would see that he has been at the forefront of methods for quite some time; that the work that he did in the '70's is more characteristic of

work that was done in the '70's, but that being said, I think at each point in time he has been doing good work, yes.

Q. Are you familiar with the work of Anita Summers?

A. Yes.

Q. Do you consider Anita Summers to be a good researcher?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: Anita Summers is a good researcher. She has not done -- she is an older person. She's now retired. And most of her research is from an earlier period of time, but yeah, she was certainly at the forefront for research when she was especially an active researcher, yes.

BY MS. LHAMON:

Q. And so I understand that distinction that you're drawing, do you give less weight to research that is older in time?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I think research methods have improved over time. So, yes, I think that you sometimes do give less weight to research that is older for two reasons.

Sometimes the data is just out of date, and

sometimes the methods have been supplanted by better methods.

However, I think one thing that one has to be a little careful about is distinguishing between the research and the researcher. A researcher who was using the very best methods that were available at his or her point in time is often updating his or her methods more quickly than somebody who is not using the best methods at his or her point in time.

So there is a distinction to be made from somebody using 1970's best methods in the 1970's and who's using 1970's best methods now. Because I think it says something different about the type of research.

BY MS. LHAMON:

Q. Are you familiar -- you've testified earlier that you are familiar with Herbert Walberg's work?

A. Yes.

Q. Do you consider Herbert Walberg to be a good researcher?

MS. DAVIS: Same objection.

THE WITNESS: I would say approximately the same thing I've said about Anita Summers. I think he is a very good researcher. Probably the research for which he's most well known, some of it was done a number of years ago, but I think he has kept up. He's a very

active researcher still.

BY MS. LHAMON:

Q. And are you familiar with his more recent research work?

A. Yes.

Q. And do you think that's good, better or best quality?

A. He largely is not doing a lot of new research. We're talking about published research, I assume?

Q. Sure. I'm talking about the universe of research with which you're familiar.

A. He is largely, at this point, in the business of summarizing the research he has done in the past, I would say.

Q. Are you familiar with the research of Russell Gurston?

A. I am -- no, I am not familiar with it enough to say anything about it specifically.

Q. I can go through the list of the other state experts, and ask you the same questions. Alternatively I can ask you to tell me which of them you're familiar enough with their work to be able to comment on.

A. Why don't you just go through the list.

Q. I'll name them all. Michael Podgursky, Richard Berg, Christine Russell, Thomas Duffy, Charles

Ballinger, John Curlin, Susan Phillips and Margaret Raymond.

A. I'm very familiar with the work of Margaret Raymond and the work of Michael Podgursky.

Q. And not with any of the others?

A. Not sufficiently familiar.

Q. And do you view Margaret Raymond to be a good researcher?

A. Yes, very good.

Q. And do you view Michael Podgursky to be a good researcher?

A. Yes, very good as well.

Q. Have you reviewed the research relied on in the experts' reports prepared for the state for Margaret Raymond, Michael Podgursky, Russell Gurston, Herbert Walberg, Anita Summers --

A. No. I have not read any of their expert reports.

Q. Okay. Thank you. Turning back to your expert report at page 2, section 2.2, you define -- I'm sorry, in section 2.2(a) on page 2 of your expert report, you cite what constitutes good research.

And in the first line you say, "The good researcher relies on objective representative data." Do you see that?

A. Yes.
Q. How do you define "objective representative data" as used in that sentence?
A. Right. Well, I think we should point out that this is in the context of -- it's actually a continuation of a sentence. So the first part of the sentence is, "Evidence on the relationships between inputs and students performance can be ranked as follows."
So I am talking specifically about evidence on that type relationship. What you want is you want data that is representative of the type of students who would be affected by the inputs that you plan to change.
So, for instance, if you plan to reduce class size across the board in the State of California, you would want to have data that was representative of students generally in California.
If you plan to reduce class size only in school districts that had very poor students, you would want data that was representative of very poor students.
So it can -- what the word "representative" means does depend a bit on the application or the policy that you are considering, but it ought to be representative of the people that -- who would be affected by the policy change.

Q. Is there a formula for determining the number of people required for representative data?
MS. DAVIS: Vague and ambiguous, calls for speculation.
THE WITNESS: There's not a simple formula, but yes, there are certainly strong statistical guidelines. There is something in statistics called the law of large numbers, and it actually gives us -- we have, as a rule, quite strong guidelines about how many people we need to have to be representative.
In any given situation there are statistics that tell us whether we have achieved this or have not achieved it. I doubt that you really want me to describe those statistical tests.
MS. LHAMON: I just want to know if there is one.
THE WITNESS: There's not a simple rule of thumb. Although there are statistical tests, it's not guesswork. I can say that almost never would twenty or five or ten be enough, unless it was -- you were actually talking about representing a very small group of students.
On the other hand, there are rare, admittedly, examples where even tens of thousands are not a sufficient number to be representative.
Really you have to know what the application

is, and you have to know what the statistical guideline is, but it's not guesswork. We do understand the properties.
BY MS. LHAMON:
Q. Okay. And is there a method for knowing whether data is objective?
A. I think usually the -- what we mean when we say that data is subjective is that we have measured it in such a way that we could give the measuring tool to a variety of different people, and they would measure it the same way.
So, for instance, if you were taking a -- if you were trying to count textbooks in a school, we all probably have the same basic method of counting. So that would be objective, and by that sort of standard, as long as we all can count the same way.
If I am measuring whether textbooks are tattered or not, unless we actually describe specific things that we need to look for, for instance, numbers of missing pages could be counted, that's less objective, because different people might have different perceptions of what the word "tattered" means.
So that's usually what we mean by objective. Different people could apply the standard and get approximately the same measure.

Q. And can surveys of people at institutions count as objective representative data?
MS. DAVIS: Vague and ambiguous, calls for speculation.
THE WITNESS: Certainly they can be representative, right. You can have a survey that is representative of people's attitudes in general. So representativeness is not a problem.
Objectivity is much more difficult. A good -- when you're trying to pick up people's attitudes, you can attempt to objectively pick up people's attitudes. Attitudes themselves are subjective, but you can attempt to objectively measure something that is subjective.
When you -- if you are going to do this, well, you have to work on having a question that is -- does not force people to answer in a particular way. And we do know that some attitudinal surveys have an influence on how people answer a question.
You try and avoid questioning methods like that. And there is a science to survey question design that attempts to get around those sorts of problems. And a good survey designer has often tried out a variety of questions, and found out which questions seem to bias people's answers.
BY MS. LHAMON:

Q. How can one evaluate whether a survey of attitudes has achieved that objectivity that you've just described?

A. You could actually use what we call a validation study. In other words, you change the question slightly, and you see when you get different answers.

You could compare the question to the questions in surveys that had been validated by validation studies. That would be the simplest way to do it.

A researcher like me will typically choose questions that are -- purposely mimic or even exactly replicate a question in a survey that has had validation studies done on it.

Q. Okay. So that's a standard for doing good research, based on people's -- surveys of people's attitudes?

A. Yes.

Q. Okay. Do you know anyone who disagrees with your view that in order to be high quality evidence on school inputs and policies one must rely on objective representative data?

A. Yes.

Q. Who are those people?

A. A number of people who do research on education

believe in doing studies that are qualitative, not quantitative.

In other words, they don't use data very much at all. They would use a description of someone's experience. And people who believe in qualitative work often do not differentiate between measures that are subjective and measures that are objective.

Q. Okay. Is that the universe of people who would disagree with the definition that you have identified in section 2.2(a) on page 2?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: The definition of what?

MS. LHAMON: That evidence on the relationships between inputs and student performance needs -- if it's to be good research, needs to be -- rely on objective representative data.

THE WITNESS: I think most of the people who would disagree with that sentence would be people who care more about qualitative measures, yes.

BY MS. LHAMON:

Q. Okay. When we started this line of questioning, you made a point to read the entire sentence, that of which good research relies on objective representative data is a part.

Is that because you wanted to make clear

that -- let me start over.

Is it correct that your definition of good, better and best research, as articulated on pages 2 and 3 of your expert report, relates to evidence about the relationship between inputs and student performance, and not to research in general about education?

A. Yes, that's true. So some research about education could be purely descriptive. For instance, I might conduct research on what schools spend in California. That is a purely descriptive question. I can measure it at all of the schools.

I probably also would like it to be objective representative data, but I was not particularly describing good, better and best with regard to something like that. I'm specifically talking about the relationship between inputs and student performance.

Q. Thank you. A few minutes ago you testified that both Anita Summers and Herbert Walberg did the best research at the time in the 1970's and 1980's; is that correct?

A. Yes.

Q. And is it your view that the full body of their research has employed the standard you defined for good research, about evidence on the relationship between inputs and student performance?

MS. DAVIS: Vague and ambiguous, calls for speculation.

THE WITNESS: No. Because I think as I tried to say earlier, standards for what constituted the best evidence in 1970 or 1980 have changed somewhat.

However, my assessment of their ability, perspicacity, and methods as researchers are based on an understanding of how they applied the methods that were available to them at the time.

So some of the methods that they used in the 1970's, I would say, are not considered the best today, but I believe that they applied them in the ways that were probably the best at the time they were applying them.

BY MS. LHAMON:

Q. Okay. Thank you. In your definition of good research on page 2 of your expert report, did you mean that a researcher who engages in good research must control for all of the factors you listed in the bullet points?

A. Yes. Unless there is a -- there are two ways of doing things, but yes, the answer is basically yes. However, there are ways to do this in which these things are not, I guess, are not explicitly controlled for.

For instance, sometimes we will look at the

same family, two different children from the family, who experience two different school policies.

We can imagine a family that has an older child who is exposed to a teacher who has a good college education and/or just a good baccalaureate education, and a younger child from the same family who's exposed to a teacher who has a master's degree at the same school.

Well, we don't actually have to control for the child, differences in the child's family background and school, because those things are all the same between the two children.

So some very good studies do what we would describe as implicitly control for all of these things, because the things don't change between the child who experiences the one and the child who experiences the other policy.

But yes, you do. These things need to be controlled for either explicitly or implicitly, and it should be very clear that that effort has been made.

Q. Did you perform a literature review of the research related to the effects of school inputs when preparing your expert report for this case?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I do that every year in the process

of preparing -- the process of preparing lectures. So I suppose I have a continually updated literature review in my head.

BY MS. LHAMON:

Q. And it wasn't specific to this case, it's just part of your work?

A. That's right.

Q. Thank you. So on page 4 of your expert report -- well, let me see if I can -- is the research that you refer to at the bottom of 3 of your expert report the literature summarized in the chart listed on page 4 of your expert report?

A. Well, mainly yes. There is research in my literature review that is not contained in the table on the next page. However, the table on the next page contains a very good share of that research.

I do not like to choose which of them should or should not go into a literature review for some -- a document like this, because my choices might be biased or they might be slanted towards studies that I happen to have read or not have read.

So I chose, instead, to use the studies quoted in a literature review that I knew had been very thorough, and that I knew had picked studies based on objective criteria.

Q. And that's the studies that are included in the table on page 4; is that correct?

A. That's right. I know that Eric Hanushek, in choosing those studies, chose all the studies that met certain criteria. So he would not have accidentally excluded a study because he didn't happen to have read it.

Q. And did you review all of the studies that are included in the chart on this report to make your own assessment of the quality of the study and the statistical significance of the relationships?

A. Some of the statistical -- the statistical significance of the relationships is described in Eric Hanushek's review. And some of the -- but he also describes many other qualities of these studies.

And I made an independent assessment based on those descriptions. In addition, I know many, many of these studies just myself.

Q. Okay. The chart itself, though, does not appear in the Eric Hanushek paper?

A. No, it does not.

Q. So this is your chart and your assessment of the quality of the studies?

A. That's right. The studies that I am -- that appear in the chart are the ones that he's included in

his review. As I said, I wanted to choose a set of studies that were chosen on their objective basis, but it is my assessment.

Q. Am I correct in understanding that your view, as expressed at the bottom of page 3 of your expert report, is that inputs such as textbooks, teacher credentials and facilities, can matter for student performance if combined with good management?

A. I think the answer to that is yes, because it's a logical necessity. It is always the case that if you have -- well, perhaps not always, but nearly always the case that if you have a textbook, and you manage it well, that is better than having no textbook available, or having a textbook and managing it poorly.

Because after all, you could, by managing your textbook well, throw it out the window, you know, and not use it. That could be the right thing to do with the textbook if it were, indeed, a bad textbook or provided misinformation, or something like that.

So it's almost a tautology to say that it's better to have inputs available to you if you're going to manage -- assuming that you're going to manage them well.

The only -- and the same thing is true of class size. If you have a smaller class and you manage it

very well, that surely is an opportunity for you that you would not have if you had a very large class. After all, you could decide to merger your classes, and you'll have a large class. So logically it's almost a tautology to say that.

The exception here is teacher credentials, where I think there is considerable controversy about whether there's really free disposal of teacher credential.

When I see "free disposal," what I mean is, if you don't want to use the input, you don't have to use the input. With a textbook, if you didn't like it, if you thought it was harmful to students, you could just leave it on the shelf.

With class size, if you had a small class, and you thought it was better for your children to be in a larger class, you could presumably go down the hall and combine it somehow.

We worry that teacher credentials are not like that; that raising the standards for teacher credentials might deter some people from becoming teachers.

So we cannot simply say that there's -- it doesn't matter, and you can just -- you can throw away your teacher's credentials. There's no such thing as that. You've put some time in your life. There's no

way you can throw away those teacher credentials, and say that having invested in that amount of time doesn't matter, because you could have been doing something else with that time.

Q. Turning back to page 4, directly underneath the table in your expert report, there's a sentence that says, quote, "Clearly there is no known right way to run a public school." Do you see that?

A. Yes.

Q. What makes it clear that there is no known right way to run a public school?

A. If we were to see consistently that certain inputs appeared to have causal impacts on student achievement that were similar or the same across studies, and we were to see statistical evidence of this routinely, that would probably allow us to deduce what the most efficient way to run a school was.

There does not appear to be any -- there just is not that much consistency of the evidence. The evidence is not only not very consistent across studies, but often, as you'll see from the table on page 4, we're not even sure about the -- whether an input has a positive or a negative effect.

So it's not just whether it has a small or large positive effect; we often don't even know about

the sign of the effect.

Q. The bottom of page 3 of your expert report, there's a sentence that says, "Good management of schools is produced when schools and students are held accountable and face good incentives to perform." Do you see that? It's the last sentence of the paragraph in 2.4.

A. Okay. Yes.

Q. What is your definition of "held accountable" as used in that sentence?

A. I think this is -- you have to put this sentence in the context of each state, and what it wishes to hold its schools accountable for. So I mean that schools are held accountable for the particular set of outcomes that the state is interested in holding its students and schools accountable for.

Q. So I take it from that last answer that the definition is the same -- excuse me -- the definition of "held accountable," as you've used it in that sentence, is the same both for schools and for students?

A. My last answer was incomplete, because I said, actually, only the state, whatever the state wants to hold schools and student accountable for.

Actually, the other -- there are other groups, as well, you would want to think about. Those include

parents, other voters, whose tax money is spent on schools, and so forth.

So it's not -- it's not merely the state. The state might represent the interests of those parents and other voters, but --

Q. Students and schools, that they're both held accountable for the same set of outcomes?

A. Well, typically we don't actually measure the same set of outcomes for schools and students. Students are often measured on the basis of outcomes like test scores, or whether they graduate or persist in school.

And schools are held accountable, if they are held accountable, on a much wider variety of outcomes, including things like whether they could sustain a financial audit. Certainly students are not subject to that type of scrutiny.

Q. Yes. In that same sentence on page 3 of your expert report, what constitutes, quote, "good incentives to perform"?

A. I think what we mean by "good incentives to perform" are incentives that cause one's performance to increase as measured by the set of outcomes that the state has, and local parents and local voters have decided to measure.

So, in other words, it's, as opposed to bad

incentives, they're incentives that request you to retreat from or decrease your performance.

Q. Do you have examples in mind of good incentives to perform?

A. Incentives come in a wide variety of -- incentives can come from many different sources. So incentives can come from -- good incentives can come from the knowledge that one's performance will be presented to the public and discussed. That could be a good incentive.

Good incentives can come from explicit rewards or sanctions, rewards for good performance, sanctions for bad performance; incentives can come from finances, something in the state's school finance system.

So, yes, there are many different sources of good, potential good incentives that one has in mind, and there -- I can also think of some sources of negative incentives.

Q. Is it your view that California now employs good incentives for students to perform?

MS. DAVIS: Vague and ambiguous.

MS. LHAMON: I'm just asking for as you've used the term.

THE WITNESS: I think that there is a mix of incentives provided right now. We're talking about

students in particular?

MS. LHAMON: Yes.

THE WITNESS: I think most of the incentives that California has attempted to put in recently are intended to be good incentives, and probably mainly have the effect of being good incentives.

I don't wish to say that there are no bad incentives in the system. There are. I don't think that they're there intentionally, and I also don't think that the state has been moving particularly in a direction to encourage negative incentives for students.

BY MS. LHAMON:

Q. What are the bad incentives that you're thinking of that exist right now for students to perform?

A. Well, one might worry about things like, right now there's a lot of ambiguity in California about whether or not you need to take -- whether a student needs or does not need to take the state tests. Parents can ask for waivers from the state tests.

This causes a problem for schools, because they are not allowed to exempt more than a certain share of students from taking the state tests without facing repercussions from the No Child Left Behind Federal Act.

So a school could lose its funding potentially if it did not have enough students taking exams.

On the other hand, students don't like taking exams, more than anyone else. And right now there's not very -- it's not clear that students have a very strong incentive to identify with the needs of the school to ensure that a representative body of students in each school takes the exam.

Parents can decide that, for their child, their child will enjoy the lack of stress associated with having to take the exams.

That makes things difficult for the school. It probably also makes things harder for the state and federal government to measure accurately, but there's a lack of a good incentive there, I think.

So that's an example, but I don't think that's intentional. I think that the state tries to do the right thing about allowing some degree of waivers. And there's really perfect circumstances here.

Q. When you say there's really perfect circumstances here, do you mean, you're defining what's bad incentives with perfect circumstances?

A. It is very difficult to give perfect incentives. When I give good incentives for most students, I may actually create incentives that are

actually not particularly good for some students, or potentially even bad for other students.

So policy makers have to think hard about trying to create incentives that are good for the vast majority of students.

Q. And you're talking there about avoiding unintended consequences?

A. That's right.

Q. So the last series of answers that you gave me, I believe you said were defined about incentives for students?

A. Yes.

Q. Are the answers different about incentives for schools?

A. Maybe you could repeat the question, so that I'm sure I get this right.

Q. Sure. Because I was painfully vague, so thank you.

My question is, are there bad incentives that you believe the State of California now employs for schools with relationship to student performance?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: I can't think of any bad incentives. I can think of schools that do not have as good incentives as we might ideally like, but I cannot think

of any bad incentives that are being particularly given to schools in California.

There are some, perhaps, bad incentives being given to maybe voters in California, but not to schools.

BY MS. LHAMON:

Q. Is it your view that a rule that provides good incentives for some agents is likely to provide poor incentives for others?

MS. DAVIS: Vague and ambiguous, calls for speculation.

MS. LHAMON: You know what, that's a quote from a paper that you've written, "The Productivity of Schools and Other Local Public Goods Producers."

THE WITNESS: Could you either -- I just want to make sure that I see that in --

MS. LHAMON: Absolutely.

THE WITNESS: Because that sounds like something that is in the context --

MS. LHAMON: Right, okay. I don't think we need to mark it. I'll just show you the article, if that's okay with you, Lynne. And the page is on page 12. And just so that we're very clear on the record, the article is titled "The Productivity of Schools and Other Local Public Goods Producers," published in 1999 in the Journal of Public Economics. And we're looking at page

12.

MS. DAVIS: And as Catherine told you before, if you want to look at more than she's pointed out, then go ahead.

MS. LHAMON: Absolutely.

THE WITNESS: Okay.

BY MS. LHAMON:

Q. Okay. And I'm just asking if that's still a view that you hold.

A. The sentence is -- I gave the sentence in the following context. The sentence is about giving rewards based on a specific outcome rule.

So, for instance, giving schools a reward based only on their high school graduation rate, something like that, as opposed to having incentives given to schools that may be partly based on explicit rules, like their high school graduation rate, but are also partly based on holistic assessments of their performance, such as a parent might make.

And to contrast the two, when a parent assesses whether a school is doing a good job or not, he or she is unlikely to look at a single measure or even a series of a few measures of how a school is doing.

He or she is much more likely to base his or her assessment on knowledge of how much his or her child

seems to be learning, of the experience of interacting with teachers and the principal. A parent tends to make a very holistic assessment.

So it's in that context that I made that statement. And I do believe that incentives that include parents' holistic assessments of how well a school is doing are better than incentives that are based on only a few methods of how well a school is doing. So, yes, I continue to believe that.

Q. Okay. And when you say, "yes, I continue to believe that," you mean you continue to believe everything that you've just described from page 12 of that article?

A. Yes.

Q. Thank you. You can keep the article in front of you, if you'd like, but I'm done with it.

What is the basis for your view expressed on page 3 of the expert report, that good management of schools is produced when schools and students are held accountable and face good incentives to perform?

A. It is based on evidence from -- that analysis or that assessment is based on evidence from a variety of different types of studies that attempt to look at variation in whether a school faces good incentives or not.

What we're trying to assess in those studies is whether schools use their resources more efficiently to produce students' performance when they face stronger, better incentives.

Incentives, I think as I said, can come from a variety of different sources. So not all of the studies are dealing with the same types of incentives. Some of the studies deal with financial incentives that school districts face.

What happens to a school district in a state when it raises students performance? Does its budget rise; does its budget fall? In some states it's going to rise, often through a connection with local property taxes.

In some states it would actually fall, because the school district would be somewhat penalized by the state school financing system. So that's one type of evidence.

We might also look at evidence based on accountability programs. Is a school that allows its student performance to fall, does it appear to be penalized by the release or publication of its scores in a manner that might cause administrators to be embarrassed or -- or corrected or otherwise made to change their behavior?

So some of it's based on evidence like that, that's just about the publication of student performance.

And finally, some of it is really based on evidence where we look at what we consider to be perverse incentives and their impact.

There are -- there are many occasions where schools face perverse incentives. For instance, a school might lose money from its district or lose money from the state if its principal is able to get people to volunteer at the school or donate things to the school, or parents to go on field trips donating their services. That would be an example of perverse incentives.

Another example of perverse incentives would be that there are some accountability, especially old fashioned accountability programs, most of which have disappeared, in which a school district could do better if it ignored a group of students who were not being focused on by the accountability system, and focused all of the efforts on a narrow group of students who were going to be focused on by the accountability system. And we see sometimes that school districts would shift their behavior in such circumstances.

So, we think good incentives produce good

management.

Q. For the last answer that you gave, were you referring to research support when you were giving me the examples that you gave me?

A. Yes.

Q. Okay. So there is research that uses those examples and has tested them?

A. Yes.

Q. What research is that?

A. For instance, there's a nice paper by Brian Jacobs. He looks at an accountability program that has now changed, it doesn't exist anymore, but that rewarded schools only based on how many students moved above a particular threshold in achievement on a particular standardized test.

So moving from the 38th percentile to the 42nd percentile, the school got rewarded, but if you moved students from anyplace else in the distribution, there was no effect for the school.

And it appears that in that school, the teachers did orient disproportionately their teaching to the students who were going to be moved around the threshold, and they neglected students who were elsewhere in the distribution.

Those sorts of systems, I think, have been

abandoned by most states, precisely because they contain unusual incentives.

Q. In addition to having good management of schools produced when schools and students are held accountable and face good incentives to perform, is anything else required to produce good management of schools?

MS. DAVIS: Vague and ambiguous.

THE WITNESS: Because good incentives can come from a variety of different sources, I suppose they really tend to contain a lot of the other things that we talk about.

For instance, when parents are involved, they tend to give schools good incentives to do what they, the parents, want them to do. So parental involvement is part of what makes for good incentives.

BY MS. LHAMON:

Q. Can you think of anything else other than parental involvement and schools and students being held accountable and facing good incentives to perform that produces good management of schools?

MS. DAVIS: Same objection.

THE WITNESS: Good management in schools, just as in any other type of organization, is something that happens through a rather complicated process.

So it isn't just that we hold schools accountable, and then the manager, who's a bad manager today, becomes a good manager tomorrow.

What happens is that parents and students and other people mobilize, they may change the person who's managing their school, in other words, they may switch to a new manager who's better; they may give him directives that allow him or her to change his management techniques; they may decide to alter the management structure of the school, and have a different type of management arrangement; they may give teachers more of a role, say, in managing the school.

So there are many other things that we would expect to see occur when a school becomes better managed. It's not as though the only thing that's going to happen is the incentives will change and nothing else will change. Many other things will change at the same time.

So I do not view those things as separate or independent factors in whether management improves, but I would expect to see them in a school that was improving its management.

BY MS. LHAMON:

Q. And I take it you didn't list these other factors in your expert report, because in your view, the

primary factors related to good management of schools are having schools and students be held accountable and face good incentives to perform; is that correct?
A. Yes. That, and an adequate level of resources so that managers can be paid.
Q. Do you believe that effective management should be flexible and tailored to specific circumstances?
A. Yes.
MS. DAVIS: Vague and ambiguous.
BY MS. LHAMON:
Q. Is it possible to distinguish a well run school from a poorly run school without reference to student performance outcomes?
MS. DAVIS: Vague and ambiguous, calls for speculation.
THE WITNESS: From the point of view of making policy, no. From the point of view of being a parent or a person, yes.
BY MS. LHAMON:
Q. What's the difference between being a person and making good policy?
A. A policy maker cannot be in every school in a state or every school even in a district every day and experience what it's like to be there. And furthermore, you cannot write policy on the basis of your subjective

observations.
So therefore, I do not believe you can make good policy with just -- just sort of experiencing schools.
I don't think that that means that a parent who actually interacts with the school on a very regular basis may not be able to make an individual assessment of whether the school is good or bad.
Q. And what would go into the parents' individual assessment? What are the factors that a parent would consider are not related to student performance?
A. Well, a parent could think about whether children seem to be excited about learning, about whether children like going to school, about whether children's expectations for themselves seem like they're high. These are all relatively subjective things that a parent might be able to observe.
A parent might also be able to observe how interactions occur in the schools. If a child is struggling in math, does a parent find out about it in time; does the teacher suggest remedies; does the parent feel that the teacher is updating him or her on the student's progress about improving in math.
Those are the sorts of things that parents can learn with one-on-one regular interactions. Probably

would not allow the parents to make policy decision, but it would allow the parents to observe how good the school was.
Q. Because it's your view that it's inappropriate to determine whether a school is well managed without reference to student performance from the perspective of policy, am I correct, then, that it's your view that it would be inappropriate for the state to try to make that determination without reference to student performance?
A. There are only two ways to try and figure out, as a policy maker, to try and figure out whether schools are performing well. One way is to create measures of student performance, and follow those measures. And that's probably always a good idea, to at least some degree.
The other is to figure out what parents think, since they get to do this day to day continual observation. So you could base your assessment of schools on what parents think about how well their schools are doing.
Typically we think it's a good idea to balance, that a good system will balance these two sources of information about how well schools are doing.
Q. Is it your view that California schools now are well managed?

MS. DAVIS: Vague and ambiguous.
THE WITNESS: I think there's a range of management. And that's actually what I have tried to display in the graphs that I've shown on pages 7 and 8 and 10. I tried to show what I think is the range of management. So I would say it varies.
BY MS. LHAMON:
Q. Okay. I actually have questions about these charts for later, but since we talked about them, will you explain them to me?
On -- looking on page 7 at the table at the top, first can you just tell me, each of the circles on the rough bell curve, does each circle represent a school?
A. Each circle represents a school in California, yes.
Q. Okay. And I take it, then, from this chart that the total number of schools from which you have data to reach the -- this chart, is included on those circles?
A. Yes. Although if schools are very close to one another, they will be represented by the same circle.
Q. Do you know how many schools total went into the data analysis that is represented in this chart?
A. Yes, approximately, but in order to explain

that fully, I'm going to have to back up a little bit and explain more about the chart.

Q. Okay.

A. These charts are based on the National Educational Longitudinal Survey, which is a survey that contains about 20,000 students and about a thousand schools.

All of the schools that are in the survey are used to compute these effects. I'm only showing the effects for California schools. So the California schools are shown here, but you could not measure these effects for California schools if you did not include all the other data, as well.

I mean, you would get a different answer. It would look quite similar, probably, but you would get a different and less precise answer if you did not include all the data in schools. So, I think that's a complete answer.

Q. That gave me several extra questions. First, when you're referring to the chart on page 7, the last answer that you gave about just showing California data and explaining the chart to me, that answer attains for both charts on page 7 and both charts on page 8; is that correct?

A. Both charts on page 7 and both charts on page

8.

Q. Thank you. And then if you'll just tell me, I don't think I got the answer, to approximately how many California schools are included in the representations that you're including on these charts?

A. That I would have to check. Now that I think about this question, it must be the case that the dots do not represent individual schools, because there just aren't enough of them. And I could check the exact number of schools.

Q. I'd appreciate it if you would.

A. It's approximately a hundred, and there just aren't a hundred boxes, so --

Q. Okay. So --

A. I know what the dots represent.

Q. That's what I was going to ask next.

A. This is a distribution function that's being shown. And the statistical program is putting a dot at each point on the distribution where it wants to turn the line.

So it does not -- the dots do not represent particular schools. They represent places where the line needs to turn in order to make a curve.

You'll notice that it's really composed of a lot of little straight lines, and every time the little

line turns, there's a dot there.

(Recess.)

BY MS. LHAMON:

Q. Professor Hoxby, just before we had started the break, we had started to talk about the charts on pages 7 and 8.

And I think you testified that the dots -- that the dots on the top chart don't represent a school, they represent changes in the chart; is that correct?

A. The chart represents a distribution. So like a -- like the bell curve distribution with a normal distribution. And therefore, all the dots are doing is to help make the shape of the distribution clear.

Q. Okay. And for ease of discussion, for general questions about what the charts mean, I am referring to the top chart on page 7, that will also explain the bottom chart on page 7 and the two charts on page 8; is that correct?

A. That's correct. All the charts are constructed in exactly the same way, except for the fact that they use different tests in different subjects. So one is about math, one is about reading, one is about history, and one is about science.

Q. So how about this, I'll talk only about the top chart on page 7, and I'll ask you to let me know if, for

answers to any of the questions, you would actually need to tell me something different for the other three charts on pages 7 and 8; is that okay?

A. Yes.

Q. The density, which is the Y axis on the chart, refers to what?

A. Density refers to what percentage of schools have that particular school management effect. So, for example, if we think about a normal distribution for something that's common, like IQ is well known to have something that's similar to a normal distribution, the top of the bell curve in a normal distribution would typically have a density of, say, 0.08.

That means eight percent of the people have an IQ that is the mean IQ or the average IQ.

Q. Okay. So at the -- looking at this, what I think is specific to the chart on the top of page 7, so looking at that chart at the top of the curve appears to be slightly above a density of 0.06; is that correct?

A. That's right.

Q. And that means that most schools among the schools that you studied had a school management effect that is somewhat less than zero; is that correct?

A. Yes. In California, yes.

Q. And actually, thank you for saying that. You

testified earlier that the -- I believe you testified earlier that the analysis used schools from multiple states, but that the chart represents only California schools; is that correct?

A. That's right. So the way these school management effects are computed, zero would be the average school management effect, pretty much by definition. It's just the way the computation would work.

But California schools will not necessarily -- the average California school would not necessarily have the average school management effect for the U.S. as a whole.

Q. So on this chart, zero represents the average school management effect for the U.S. as a whole, and then the bell curve on the chart represents how California schools perform with relationship to the average effects on the X axis?

A. That's correct.

Q. So then can you tell me how you determined what is, just to take one point on the chart, a negative 25 school management effect? What does that mean?

A. Okay. So I should say first that what I have done here is, although potentially unfamiliar, quite a standard thing to do.

The idea is really quite simple, although it might seem complicated to describe with statistics. The idea is that when I look at students' performance across schools in a wide variety of schools, some of the differences in student performance I would be able to attribute to something about a student's family background.

So, for instance, it tends to be the case in the United States that if your parents have more education, you, as a child, tend to do better in school. That may or may not be a causal effect, but it certainly is a very strong association.

So, some of the differences in student performance that we see are due to differences in family background. Some of them are associated with differences in a child's neighborhood.

For instance, growing up in a neighborhood where lots of other kids have parents who are highly educated usually is associated with a child doing better in school.

And some of the effects, some of the differences in student performance are associated with measurable school resources like per pupil spending or teachers' salaries.

That being said, it is also the case that we

often see that children in a school are clustered around a certain level of student performance for reasons that we cannot understand, looking just at their family background, the neighborhood they experience, or the school resources that they experience.

There is what one might think of as too much clustering of their student performance, given how diverse their family backgrounds are.

When we see that the children in a school are performing at a level that is, say, unusually high for their family background, neighborhood and school resources, and that they all are clustered in a certain range, or we see that they are performing unusually badly, given their family background, neighborhood and school resources, and they're all clustered in a certain range, we say, that's a school effect.

So we're looking at the part that we cannot explain with other things that we know about a student. In this case, looking at the NELS data, we know a tremendous amount about these students. They're followed over time, from the time they are quite small children; we know even about their performance in prior grades. So about these children, we know a great deal.

So what is not explained by the things that we know is not a lot, but a little. Nevertheless, we see

quite a lot of clustering in this data of students close to other students in the school where they attend.

And what -- when you estimate a school management effect, what you're attempting to estimate is, where is the middle of that cluster, the part that we -- the part of the cluster that we can't explain by other things about a student.

And the best way, perhaps, to think about how, exactly how we get this statistically, is if you were to take two schools where every child had a mirror image child in the other school, so they had, for every child with a -- parents who had certain education and certain income and certain number of siblings, and the child was a certain order in the family, and the parents took them to museums three times a year and to libraries five times a year, and all these other things, would be exactly the same, two mirror image schools on all of these variables;

If we saw one cluster of children performing at, say, 55 on a test, and the other mirror image school performing at a 45 on the test, and the average on the test was 50, then the one school we would have has a school management effect of plus five. That's the 55 minus the 5; and the other school would have a management effect of minus 5. And that would be the 45,

50 minus 45.
So we would get a negative -- a plus 5 and a negative 5 there. And that's really exactly how we construct these school management effects from the data; is that we first try and control for everything else, and then we try and say, how different are you from the other schools that look just like you on all of the variables that we do see.
Q. Okay. In that last answer at one point you referred to school effects.
A. Right.
Q. Do you use the term "school effects" interchangeably with "school management effects"?
A. That's correct. School effect or school management effect are interchangeable.
Q. And I think you testified that if a student -- well, tell me if I understand this correctly. If a student -- students in a school score five points more than you would expect given other students with their same socioeconomic background and school circumstances, then those students get a plus 5 management effect, and that school gets a plus 5 management effect on the chart; is that correct?
A. Right. It has to be what we see for all the students in a school. It can't just be for one or two

students in a school.
So this is not based on comparing individual students to individual students. It's really saying, what do we see as the -- how does the whole cluster of students move this school, not just how does one.
Q. And taking the NELS data, you then, when you say all the students in the school, you're referring to all the students from the school who are tested as part of the NELS test; is that correct?
A. That's correct. And there is a cluster in each school, because that is the method by which the NELS sample is formed.
Q. So, am I reading the top chart on page 7 correctly, to say that there's no school in California in which students score more than fifty points below the average students statewide on the tests that the NELS test uses?
A. It's impossible to score more than fifty points below the mean on this test, yes.
Q. Okay. I mean, I'm not trying to say --
A. The range of the test is a hundred points. And if you were to score the average -- the average on the test is fifty points. So if you were to score the average, you would be, on this chart, just at the zero line, because you would have a zero school management

effect. You would be doing about average.
So the worst you could do is fifty points below that average, and the best you could do is fifty points above.
Q. Thank you. And so then reading the chart on the top of page 7, am I correct to say that there are some small number of schools in California that were part of the NELS database that do score essentially a zero, because they are negative fifty school management effect?
A. The school -- the school itself, what we are finding out is that the school itself is contributing sort of negative fifty to them, but the students might not be getting zero, okay, so let's say that this was a school that enrolled students who were from very affluent, educated families, and they lived in a neighborhood with other very affluent, educated families, a school that was producing very unusually low student performance among children of that type would have a negative, a very negative school management effect, but their scores might not actually be terribly low, they would just be very low, considering the type of students we were dealing with in that school.
Q. I see. So there could be a school in which the student population is largely white, very well educated

parents, parents who were very involved in their schooling, very high socioeconomic status, but the students perform only average by comparison with all other students statewide.
And so then that might appear as a negative number on the school management effect, because the school is not contributing much to the students learning?
A. That's exactly right. And the reverse is also true, that if you had a school that dealt with students who were from very poor families, where most of the parents were high school dropouts, and there was very little evidence of parental involvement, if the school was producing unusually good student performance, given those socio-demographics, it would end up with a positive number for the school management effect.
Q. Okay. Thank you. You testified earlier that you thought there were approximately a hundred California schools that were part of the NELS database. And I understand that you don't know that for sure sitting here today; is that correct?
A. I could check, but I would need to check to be exact.
Q. I actually would love it if you would check, but for purposes of this next question, do you know

approximately how many total schools there are in the NELS database that are not just in California?
A. About a thousand.
Q. Okay. And for purposes of the charts that you've used on pages 7 and 8, when you have referred to unusually high or unusually low performance for purposes of determining the school management effect, I take it that you -- the comparison, for purposes of unusual, is all of the schools in the NELS database, not just the California schools?
A. That's right. All of the schools in the NELS database.
Q. Okay. Thank you. I think when we started, when you pointed to the charts on pages 7 and 8 as part of an answer to my question, whether it's your view that California schools now are well managed; and I understand our previous discussion to mean that you think there are some California schools that are well managed and some that are not, as seen in the charts on pages 7 and 8; is that correct?
A. That's correct. Also, the chart on page 10, it does -- computes the same types of effects, but is based on only California data. So here we have every school in the state of California included, based on the star system of data in California.

So it has some -- there are some pluses and some minuses vis-a-vis the NELS data. The pluses are, this included every school in California. So it's comprehensive, and it also is based on the test that California is using itself to measure student performance. So that's an additional plus.
This is -- these are measured purposely from before the era of accountability in California. So I'm trying to measure the school management effects before all the new accountability system is started.
The reason that this is not in some ways as good as the NELS, although it's better in all the ways I just mentioned, is that our ability to control for family background, neighbor and school resources is somewhat poor based on this California data.
I still have very good measures about neighborhoods, and I have some very good measures about family background based on the census. And the measures of school resources are probably actually better than in the NELS.
However, I have much less information about a family's behaviors, whether or not they, say, go to parent/teacher conferences, take their kids to the library, things like that.
So there are pluses and minuses, and that's why

I showed both.
Q. I think I am going to come back to these later, but for right now, you just testified that for the data analysis that you did based on the California STAR data, you purposely did it before the new accountability system has taken effect; is that correct?
A. That's right.
Q. Why was that important to do?
A. Because normally in -- I was -- the point that I was trying to make was that in the absence of a state monitoring its schools performance, there will be a range of management abilities typically.
After a school -- after a state has been monitoring performance or giving incentives for its schools to perform well, for a few years we often see that these distributions will become tighter and tighter.
Especially as the managers who are in the lower left hand tail, in other words, that means the managers who appear to have a bad effect, are eliminated as the schools discover this principal just is not doing a good job.
Q. Would it not be fruitful now, currently, this month, to compare the management effects that you do demonstrate based on the STAR data, to the management

effects with more recent data, since California's accountability system has been in place?
MS. DAVIS: Vague and ambiguous.
MS. LHAMON: Go ahead.
THE WITNESS: You could do that, yes.
BY MS. LHAMON:
Q. And I just am trying to figure out why you didn't. And you've testified it was purposeful, so I assumed there was a reason.
A. I think the point that I was trying to make was about the range of potential school management effects in California.
I don't -- I think it was just an oversight. I could do it using more recent data. It's certainly something I could do. It's not going to be perfect, because California keeps changing its accountability system.
So in 1997, '98, the Stanford 9 was an important part of the accountability system. It has now been given much less weight in the accountability system. So it's not quite an apples to apples comparison, but yes, it could be done. It might be helpful.
Q. Do you know if the Stanford 9 data gives you enough information to be able to compare schools'

performance with each other, in the way that you have done on -- in the charts on pages 10 -- on page 10?
MS. DAVIS: Same objection.
THE WITNESS: I'm going to try to answer that question in a statistical way.
MS. LHAMON: Okay. I'll try to stay with you.
THE WITNESS: I think you've asked whether the Stanford 9 data are sufficiently informative to make comparisons of school management effects.
I think the answer is yes, because our statistics show that you can differentiate among school management effects in a statistically significant way for schools that are -- do not have terribly different school management effects in California.
Let me say that more precisely. When I say something that's statistically significant, I mean that it is extremely unlikely that the management effects that I am measuring are not real, and are just an accident of the data.
And typically the threshold for something being statistically significant is 90 percent probability or 95 percent probability that it is something that you have really, that is a real phenomenon that you have observed in the data, and not an accident of the data.
I typically use the 95 percent cutoff. So

that's what I'm referring to when I say something is statistically significant.
BY MS. LHAMON:
Q. Thank you. Am I correct that the purpose for which you've included the charts about school management effects in California schools -- and when I discuss it, I'm talking about the charts on pages 7 and 8, as well as the chart on page 10 -- is to demonstrate that management in schools can have an effect on student performance, and it's important for the state to monitor good and bad management?
A. It's meant to demonstrate that student achievement is effected by school management and not just by the following other four things, which are family background, a child's neighborhood and all of the things that that encompasses, a school's resources, which would really include anything about a school's input that we can measure, and finally a child's own ability.
A school management effect is the part that's associated with the school that is not associated with any of those other things. And it's to demonstrate that there is a range that school management matters, too. Not that those other things don't matter, but the school management matters quite a lot.

Q. And in your last answer, you included among the things that can affect student performance, a child's own ability, which makes perfect sense, and I just wonder how that is controlled for.
Because I take it that's not part of a management curve; so am I correct first? You are nodding yes, that it's not part of the management curve; is that correct?
A. That's correct.
Q. Then am I correct that the control for a child's own ability is by comparison with other students who have similar backgrounds with that child?
A. No. It's really better. When we compute school management effects, it is the case that anything that is not explained about a student's performance and that is individual to that student or idiosyncratic to that student is automatically not included in the school management effect.
In other words, unless it happened to be, unless -- let me give you an example of how this could possibly go wrong, because you could see how it can't really happen.
The only circumstances under which I could potentially confuse students' ability with a school management effect, is if every student in a school

happened to have exactly the same ability.
Otherwise, the school management effect cannot be, statistically cannot be anything that differs among students within a school.
So that is automatically excluded from what we -- from what I have calculated to be the school management effect.
Another way of saying this is, whatever it is that's measured as the school management effect has to be true of all students or of the average student in a school. It cannot only hold for some students.
So unless all students are exactly the same and high ability, it just statistically cannot be in the school management effect. That is automatically excluded from the school management effect.
Q. And how did you ensure that that is automatically included? Is it that you're using an average score for the schools, and so that excludes the variation, or something else?
A. That's a way of thinking about it, yes.
Q. Would it be fruitful for the state to take the, let's say the top chart on page 7, identify which schools -- I think you can't, because the NELS data doesn't allow you to do that because of restricted use; is that correct?

A. The state could easily get the restricted access license and find out which ones they were, yes.
Q. So assuming someone could access the restricted use data, would it be fruitful to take your top chart on page 7, identify which schools are peforming with the management effect above zero and which schools are performing with management effects below zero, and devise a system to monitor school performance directed toward the schools that have management effects below zero?
MS. DAVIS: Vague and ambiguous, calls for speculation.
THE WITNESS: An accountability system that attempts to look at schools that are particularly low achieving, given their circumstances, will typically pick out some of the same schools.
So one could say that California's Intervention Program, which we discussed yesterday, is an attempt to do approximately that. It is not as exact as computing school management effects, but there are many elements that are similar across the two methods.
And I would be very much surprised if a school that had a very big negative, a very big positive school management effect, were not also picked out by California's accountability system as very likely or

very unlikely to be in need of intervention.
Now, that's not to say they're exactly the same, because there are, there are quite a few differences which I could discuss, but they are related, the two methods are related to one another.
The method of targetting schools that are not improving student performance is an attempt to take out initial student performance at a school. So it's an attempt to control for some of these things, like family background and neighborhood.
Some of the other things that are written into the language of that legislation are implicitly also attempting to get at school management effects. It's not as scientific a method, I guess, but it's -- they are, it's certainly a related method.
BY MS. LHAMON:
Q. To make sure I understood that last answer, we're talking about the IIUSP program in California; is that correct?
A. That's correct.
Q. And based on your review of the program, it's your view that the program roughly control four of the same kinds of things that you've controlled for the charts on pages -- on pages 7 and 8 to determine which schools to intervene in?

A. Very roughly. There are -- one of the things that the -- that the program does is, it does look for improvement in a school. So in that sense, it is attempting to control for family background and neighborhood.
There are elements of the program, though, that also attempt to look at low peforming schools, per se. So that if you are a low performing school, you are more likely to be targeted even if you are improving somewhat.
So I think there's also an emphasis in the program on just making sure that kids are not scoring below a certain threshold.
Q. Thank you. Do you have a view about whether California's system of public education would be improved if district management were improved?
MS. DAVIS: Vague and ambiguous.
THE WITNESS: I think the answer to that is kind of yes mechanically. It's hard to imagine what improvement in district management would not improve California schools.
BY MS. LHAMON:
Q. I didn't ask the the threshold question, thank you, which is, do you have any understanding of whether there are districts in California that could benefit

from improved management?
MS. DAVIS: Same objection.
THE WITNESS: I believe, based on the evidence that I've shown you here, that there are schools in California that are performing unexpectedly poorly, given the resources available to them and the demographics of their students.
BY MS. LHAMON:
Q. And so that means that there are districts then that could benefit from improvement based on the evidence?
A. Based on this evidence from 1997, '98, yes.
Q. I'm sorry. When you say that, you're referring to the STAR data then?
A. I'm referring to the STAR data especially, and alos the NELS data. And the NELS data is also not 2003 data. It's -- the NELS students here went to high school and graduated in 1992. So they're even older than the data shown on page 10.
Q. Okay. I should ask, then, you don't have any reason to think that the data that you've described in the charts on pages 7 and 8 is out of date for purpose of deciding what actions to take on it, even though it's from 1992, '93 graduates?
MS. DAVIS: Vague and ambiguous.

THE WITNESS: If you wanted to identify the schools in California that most appeared to need improvements in management, you would want to use today's data.

To make the general point, that there is a variation in management, I don't think it makes a great deal of difference whether you use this year's data or last year's data.

BY MS. LHAMON:

Q. Or '92, '93 data?

A. Correct.

Q. Okay. Turning to page 5 of your expert report, in section 3.3, I'm actually specifically interested in the third sentence, but you should take -- you also need to look at the first sentence, because the third sentence refers to the latter case.

My question is, is there research that supports the view stated in section 3.3, that if, quote, "a specific set of inputs and input policies," end quote, are mandated for schools, then, quote, "a good manager may find himself unable to use resources effectively, because his local circumstances would dictate a different set of inputs and policies than those forced upon you"?

A. Well, I think I've tried to show you some evidence directly in my report. As I've said, I really

do try to include evidence in my report for things that I say, because I like people to be able to look at evidence for themselves.

Yes, there is evidence of the type I provided in the report, which looks at, for instance, whether input policies are centralized in a state.

There is also a lot of school based evidence that describes what principals do who are trying to work around specific input policies.

And an example might be something like a principal who would prefer to spend his technology budget on computers for kids in fifth and sixth grades, but who has been told that it needs to be spent on kids in first through third grades. There's quite a lot of research on what principals do when they're trying to work around policies like that.

Similarly, there's a tremendous amount of both qualitative, subjective, and external non-anecdotal evidence about principals trying to work around policies about teacher assignments. That's probably the most, the single most important thing that schools do. And so there's just a lot on that, yes.

Q. When you've said that -- I appreciate that you've tried to show us in your reports what you relied on -- specifically with respect to this quote from

section 3.3 on page 5, is the evidence that is in your report that you're relying on the discussion of centralization?

A. Yes.

Q. Okay. And I take it then that you've extrapolated from the centralization point the principle that a good manager may find himself unable to use resources effectively?

A. What the evidence on centralization shows is that there is a relationship between centralization of certain input policies and student performance.

That's like a -- you see the things going into the black box, centralization, and we see things coming out of the black box; to understand what's really happening inside the black box, what's happening inside schools, it is very useful to read accounts of what managers are doing with school input policies.

Q. And that's the other evidence that you've just been describing, that explains that relationship; is that correct?

A. That's right. So it is useful to also know what administrators themselves, how they describe themselves coping with the types of policies that are listed in the centralization chart.

Q. Okay. Thank you. At the last sentence in

section 3.3 on page 5, the sentence that is underlined, you refer to -- you say, "Indeed, many of the innovative management techniques employed by successful administrators would not have been discovered and could not have been implemented had those managers been forced to follow a specific set of input policies." Do you see that?

A. Yes.

Q. Which are the innovative management techniques employed by successful administrators that would not have been discovered and could not have been implemented if management had been forced to follow a specific set of input policies?

A. Here I was relying upon, actually, some studies that had been assembled by the defense, and just based on interviews with principals and administrators in the State of California; and I was also relying on a variety of newspaper articles and journal articles in the very well known journal, "Education Week."

I have -- I clipped these articles when a particularly successful administrator is interviewed or describes something he's done to be very successful.

And many of these, many of the techniques that are employed by successful administrators are unusual and work particularly well, but are not what would be or

really could be required of all schools in a centralized policy.

So, for example, there are some famous principals in the State of California who have really worked to get younger teachers to volunteer from programs like Teach for America, or the Teaching Troops program of the military.

That's a special technique that I think works very well for some administrators. It certainly is not something -- it's something that if anything probably mildly violates state guidelines in California -- maybe not violates, but runs very close to not following the guidelines in California.

There are other successful administrators in California who have decided to devote some of their school resources to doing things like having uniform policies. In other words, children have to wear uniforms.

That's probably not something that would be advocated by a central administration, because it probably work in every school in California.

And often principals have had to find money from outside sources to pursue things like that, precisely because central control of input does not suggest that they should do things like that, so they

are not given any type of budget to do that, and they are often not supported centrally for those types of ideas.

We also see some successful administrators doing things like going around to local businesses and getting certain types of technology or equipment donated that is different than the equipment or technology that is suggested centrally.

Many of these techniques are things that are innovative, work particularly well in a specific set of circumstances for a particular administrator, but they are just not things that can or would be done by a centralized state policy, because there's such a variety of needs for kids.

It is amazing how different different managers can be, especially in schools that for one reason or another face unusual circumstances. And the things that work there would often not be things that I would really recommend at all for suburban things or middle class, or affluent environments, despite the fact that they work really wonderfully in some of the more difficult environments in which administrators work.

Q. The articles that you referred to, how recent are those?

A. I've been clipping them for years, so -- some

of them are very recent. There are a couple every week, really, that deal with something like this, and some of them will be from California and some of them not, but of course, California being a very disproportionate part of the United States, has a disproportionate number of articles.

Q. And so even in the last year there have been articles from California?

A. Yes.

Q. Thank you. And then I think you testified that in part, you relied on studies assembled by the defense that were based on interviews with principals in the State of California?

A. Yes.

Q. What are those studies?

A. I do not know the titles of them exactly, but I was alerted to their existence by Paul Salvoti, so I would probably be able to come up with the web sites for them again.

Q. Did he tell you on the telephone?

A. Yes.

Q. And they were all -- all the studies were available on the web site, or on multiple web sites?

A. Yes, that's correct.

Q. Was it multiple web sites?

A. Multiple web sites.

Q. But you don't remember what they were now?

A. No.

MS. LHAMON: Okay. Lynne, I think that's information that we're entitled to, because it's something she's relied on.

MS. DAVIS: To the extent Paul remembers and knows what he suggested, I will definitely ask him.

MS. LHAMON: Thank you.

Q. Do you have an approximation of how many studies there were?

A. Three, but each study covered multiple administrators. This is not a -- this is a partial memory of something that I read quite some time ago.

Q. Turning to the data analysis at some further length then, is there a reason that you did not use the National Assessment of Educational Progress data to run analysis of school management effects upon which you relied for this case?

A. In general, the NAEP data have less information about family background than something like the National Educational Longitudinal Survey.

They certainly -- you certainly do not have the ability to control for a student's own prior performance. And we also do not know in the NAEP data,

even with the restricted access version, which I do have, you do not know which school it is, so you cannot identify a school with its neighborhood. And that is a big disadvantage, because often we would like to know what a neighborhood is like.

That being said, you could go through the exercise with the NAEP data, and it would just not be as high in quality, because you would have -- you would have been able to control for fewer things.

Q. For the analysis that you did from the NELS data on -- you've discussed it on pages 5 to 8 and 11 to 12, was that analysis sensitive to variance in student experiences among specific teachers and among classroom groups?

A. I think what you're asking me is, if -- if I had excluded all the students who were associated with a particular teacher in the analysis, would the analysis have changed?

MS. LHAMON: You know, it's not what I mean to be asking. So thanks for saying that, and let me show you an exhibit, and let's see if I can make more sense of myself.

(Deposition Exhibit 6 was marked for identification by the court reporter.)

MS. LHAMON: Let's take a break.

(Recess.)

MS. LHAMON: Lynne, I have corresponded with Paul Sovati about the articles Professor Hoxby mentioned. He doesn't have a recollection of suggesting any articles to Proffesor Hoxby, but he's going to look through his notes and e-mails, so as soon as I find something, I will let you know.

MS. DAVIS: I appreciate it. And just so we're clear with Paul, the testimony wasn't that there were articles, it was that there were some studies assembled by the defense indicating that are multiple studies.

And Professor Hoxby told me that at the break, that how she remembers the conversation was that Paul had asked her, have you seen some studies that talk about or interview successful administrators in different areas, and so -- or difficult schools, I should say, so --

MS. LHAMON: That's your memory?

THE WITNESS: That he said, have you seen the following studies that contain discussions, interviews, accounts of principals who work in difficult schools. And that's -- that was the conversation.

And he didn't -- he did name them at the time, because I found them, but that's a -- it was a pretty off the cuff thing, so I'm not terribly surprised that

he doesn't recollect it.

MS. DAVIS: Yeah. So I just wanted to let you know that I -- we tried to jump on it.

MS. LHAMON: And again, I appreciate it. Thank you.

BY MS. LHAMON:

Q. Professor Hoxby, I have handed you what we've marked as Exhibit 6. Do you have that in front of you?

A. Yes.

Q. And do you recognize Exhibit 6?

A. I do. It is a memo that I sent to Paul Sovati, and I believe it was meant to be sent to you.

Q. And you've reviewed it and the memo is complete. It's marked at the bottom State-Exp-CH 0047 through 54?

A. It appears to be complete.

Q. Thank you. Just so we're clear, the top of Exhibit 6 is paginated 2, but there actually wasn't a page 1 in what we received. We're not missing anything, are we?

A. No. I think there was just a cover sheet that said was from me, so that would have been page 1.

Q. Looking at the first two pages of Exhibit 6, so they're marked at the bottom State-Exp-CH 47 and 48, you list on those two pages the independent variables for

your regression analysis using NELS data for figures on pages 7 and 8 in your expert report; is that correct?

A. That's correct.

Q. As I look at these independent variables that you've listed, I see a number of individual students -- excuse me -- measures for family characteristics beginning on the page that's marked 47.

A. Right.

Q. And then I see averages for school inputs, and that's on page 48.

A. Right.

Q. And so that's -- so my question is, is there a reason that you have used individual data for the student measures for family characteristics, but averages for the school inputs?

A. Yes, there is. In general, we think that schools policies can affect what happens at a school in general.

For instance, they could affect what the average teacher salary is, but a school policy, a school rarely has a policy about an individual teacher's salary.

So, for instance, a salary schedule at a school might say, this is the minimum teacher salary, this is the maximum teacher salary, and these are the teacher

salaries in between for different levels of seniority.
We rarely see a contract that takes the following form. Mrs. Jones' salary will be $44,000.00, and Mrs. Smith's salary will be 45,000.
Therfore, what we -- the policy variables that are controlled by a school are typically the salary schedule, as opposed to individual teacher salaries.
When we look at an individual teacher salary in a school, say, part of that will reflect the school's policy about teacher salaries, and part of it will reflect what the individual teacher is like. The assignment of a student to a teacher within a school is non-random.
So if we want to control for a school's policies, we should not actually control for the part of the variation in the teacher's experience by a student that is not part of the school's policy. I will give you an example of why.
Suppose that very able students in a school were -- went to AP classes, advanced placement classes, I should say, and that the teachers who were put in advanced placement classes were teachers with, say, a lot of experience, or teachers who had advanced degrees, or something else.
When we saw that a child was associated with

teachers who had advanced degrees, or teachers who had a lot of experience, and that those teachers were highly paid because they had advanced degrees and a lot of experience, that would not be because pay was necessarily high on average in the school, or that the school had a particularly generous salary schedule; that might just reflect the fact that we were looking disproportionately at a student who took AP classes.
In general, we try to distinguish between what our school -- what our school policy variables, and what are things that vary within a school, that vary because of a student's own ability.
Nevertheless, after having gone through this long explanation, I can tell you that if I were to put in individual variables for the exact teacher that a student experienced, it really would not make any difference here.
And the reason is that I've already controlled for a student's own ability and so forth. So once you've controlled for that, adding in addition, say, the teacher's -- that particular teacher's salary, would not make a difference, except possibly to the extent that it was another measure picking up the student's ability, in which case the interpretation of it would be wrong, anyway.

So you could not interpret it as a causal effect, and it would be -- I'm always weary of putting in things that I know would have biased coefficients if I put them in. And that certainly would have a biased coefficient.
Q. How do you know that it would have a biased coefficient, or that it would be wrong anyway?
A. Because we know from lots of evidence that the assignment of teachers to different types of classrooms is highly non-random within school districts.
It is -- teachers who have more seniority who are more highly paid, etcetera, disproportionately get assigned to classes that, in some schools, are unusually filled with gifted children and other schools unusually filled with less gifted children, I don't know which bias would dominate in the regression, but I am positive that whatever I estimate would have been biased.
Q. I see. So that's a sufficiently universal truth, that that would have -- that you know that it would have biased --
A. Absolutely.
Q. Thank you. When you performed the regressions on which you relied on your expert report, did you regress all the variables simultaneously, or did you enter the variables separately?

A. Simultaneously.
Q. And why did you choose to do that?
A. Well, if you -- that's a difficult question, because I can't imagine an argument for not doing that. So I'm trying to think of why someone would argue that that wasn't the right thing to do.
When you run a linear regression controlling for many things simultaneously, you are most able to determine the effect of each variable specifically, or to identify the effect of each variable specifically.
Let me give you an example. Suppose I looked at the effect of fathers' education on student achievement alone. And then I looked at the effect of family income on student achievement alone. I would learn from that exercise neither the effect of the father's education, nor the effect of family income.
And the reason is that fathers who have a lot more education tend to also have higher incomes. So in the first case, I would have learned both the effect of father's education, and the effects of the families having higher income, and a bunch of other things that would be associated with fathers having a higher education, and they would all be mushed together.
In the second case I would have learned the effect of family income, plus the fathers probably

having more education, plus a variety of other things associated with family income, and they would all be, again, mushed together.

I would have no way whatsoever of figuring out which effect was due to family income, which effect was due to father's education, and so forth.

I cannot think of any reason to not attempt to understand the effects of each variable independently.

Q. Does the NELS database include any variables related to school facilities?

A. It does. And it could be -- its variables related to school facilities are not particularly informative. It has things like how many books are in the library, how many computers are in the school. Those are things that I have included.

It is possible to tie the NELS data to district level data on school facilities. So that could be done in addition.

The sort of subjective facilities measurements that are contained in some of the plaintiffs' experts' reports are not not commonly used from the NELS. I don't want to say that none of them are available, but people do not use them perhaps because they're not objective.

Q. Did I understand your last answer correctly,

that you testified that school facilities data is not particularly informative?

A. I have not seen anyone use facilities data in the NELS. And I am not, myself, familiar with high quality facilities data in the NELS, apart from the variables that I have actually used.

There may be some variables that I have neither used myself, nor have I seen used in other reputable studies that may exist. I don't wish to exclude that possibility, but that's as much as I would say about that.

Q. And you didn't undertake any investigation to find that when you were preparing to --

A. I never use subjective variables myself, because I just don't think that's good research methods. So there may be some subjective variables there that I would not have used myself.

Q. Okay. But so you did look within the data, the NELS data, to find out if there were any objective facilities indicators, and you used the ones that you found; is that correct?

A. That's correct.

Q. Okay. And just so I'm clear on which ones you're referring to, I think you listed how many books are in a school as one of the facilities data?

A. Yes.

Q. Is there anything else that you used?

A. The number of computers per student in the school.

Q. Okay. And --

A. I'm quite sure for instance, that there's nothing about square feet per student or the temperature in the school. I know that such variables do not exist in the NELS.

Q. Okay. And the two variables that you did include, that the two -- excuse me -- the two facilities variables that you did include, the number of books per student in the school and the number of computers per student in the school, is it your view also that those two variables are not particularly informative?

A. No. I think they are quite informative. Well, they're as informative as they can be, yes.

Q. And just what was that?

A. Well, I believe that they measure something real, which is the number of books and the number of computers in the school. So that is information. Whether they are powerful predictors of student performance is a separate question.

So they are informative about the number of books and the number of computers. They may not be

informative about student performance.

Q. And that's what you would find out through the regression, right?

A. Yes, correct.

Q. And do you know if the NELS database includes any variables related to whether students have books to use in class or at home for homework?

A. It does not include any objective variables like that. It includes -- it may include some subjective questions about how teachers feel about the adequacy of resources. As I said before, I don't use subjective questions.

Q. Okay. Do you know if any of the California students whose data is included in the NELS database and whose data you used for your report attended multi-track year round schools?

A. I do not believe there is a question that specifically asks about multi-track year round schools in the NELS.

However, there probably are students who attend such schools. And it would be possible, probably, to figure out which ones that they were.

Q. Why do you say that there probably are such students included in the NELS database?

A. My understanding is that multi-track year round

schools are more likely to have occurred in districts that are large and growing in California, I'm thinking of a few districts in particular.

NELS students are disproportionately likely to have been picked from large growing districts based on the sample design. So it would surprise me very much if there were no students in the sample from such districts. It's possible, but the easiest way to answer that question would be to actually --

Q. And you haven't yet looked for that, have you?

A. No. And we'd also need to have data about whether schools were multi track and year round back in 1998 through 1992. So it's not good enough to know whether they're multi-track and year round right now.

Q. So you didn't investigate that question either?

A. No.

Q. And I believe you just testified that NELS students are disproportionately likely to be from large districts; is that correct?

A. The sample design is meant to ensure that large districts are picked up by at least some students in the sample.

Q. And why is that?

A. Because they're important school districts, so you wouldn't want to leave out all the large school

district in the United States.

Basically some school districts in California, such as L.A. Unified, are so big that it is unlikely that any representative sample of students in the United States would skip students in L.A. Unified unless it was a sample designed to skip L.A. Unified.

Q. Okay. Why did you choose to use tenth grade data for the NELS data analysis?

A. Rather than twelfth grade?

Q. Twelfth grade, for example.

A. I had three choices. Eighth grade, tenth grade and twelfth grade. I thought tenth grade was better than eighth grade, because in the tenth grade I could control for a student's own prior achievement in the eighth grade. So that's why I wanted to choose either tenth grade or twelfth grade.

Between the tenth and the twelfth grade, the NELS decreased its sample size somewhat, owing to, I think, budget cuts at the U.S. Department of Education. So we just ended up having a bigger sample in the tenth grade than in the twelve grade. So that was the main reason.

In addition, some students drop out between the tenth grade and the twelfth grade, and/or students who drop out in the twelfth grade, we are much less likely

to know how they would have been doing in school. Some of them are, indeed, tested in a certain way, but many of the dropouts are not tested.

We don't want to neglect people who are going to be future dropouts, they're important students, too, so if you use the tenth grade scores, you avoid that problem.

Q. Because dropouts take place most often between tenth and twelfth grades?

A. That's right. In fact, I should say that they are not necessarily in the tenth grade. NELS students are students who were in the eighth grade in 1988. So if they, for some reason, have not advanced by 1990, they would still be picked up by the survey.

It's just typically the students tenth grade year.

Q. So they're in one of eighth, ninth or tenth grade by 1990?

A. Correct.

Q. They haven't dropped out?

A. Correct.

Q. Okay. We'll just call it tenth grade for ease of reference.

Is it your view that you then have a better sample for purposes of the analysis that you were doing

in your expert report from the tenth grade data than you would have had from the twelfth grade data?

A. Somewhat better sample, but I do not think the differencess would be dramatic.

Q. So if it was just a choice, you'd pick tenth grade?

A. Right. I have the sense that readers only want to read so many graphs and figures, so I tried to choose the one that was best. If I thought they had an infinite appetite for figures, I would have shown them both.

Q. Okay. Thanks. I think you've told me this, but let me make sure I understand it. For the regressions that you've described on pages 5 through 8 of your expert report, the comparison that you are using is, all other schools within the NELS data that are not California schools; is that correct?

A. All other schools, including California schools, and not California schools. All other schools in the NELS.

Q. Okay. So then how does that work? Is there a single school that you pick out, and then you compare all of the schools to that school?

A. That's the right way to think about it, right, yes.

Q. And is that school a California school, for purposes of your analysis in this report?
A. Well, the ones that I -- in fact, a school management effect is computed for every school in the sample. I don't show the ones for school management effects in, say, New York schools or Oklahoma schools, just because I did not think people would be interested, but in fact, I did compute one for each school.
Q. But the comparison school, though, was a California school, or it was not?
A. In each -- each school is compared to all other schools.
Q. So there's no school that's not compared?
A. That's right. All schools are compared, but every time I'm trying to estimate the school management effect for one school, I'm comparing it with all other schools, and think about this infinitely, and going around in a sort of circle.
Q. Okay. Thank you. Turning to pages 11 and 12 of your expert report -- let me ask you a different question first.
For pages 11 through 13 of the expert report, and specifically for the charts on pages 12 and 13, is the data for those charts national data or California specific data?

A. This is from national data. There is not California specific data that would allow you to do charts that would be anything like as accurate as the charts that I did on page 12 and 13.
Q. And why is that?
A. Because the National Educational Longitudinal Survey contains extremely detailed data on students' families, their family background, what their parents are like, parents' income, parents' education, parents' behavior.
There is no California specific data source that contains such detailed information. I could use only the subset of students in the National Educational Longitudinal Survey from California, but there is no alternative source of data that is specific to California that includes such detailed information.
Q. And I take that point. Actually, I was asking, or meant to ask, why you didn't use that subset of California specific schools in the way that you had for the charts described on pages 5 through 8 on the expert report.
A. Well, you'll remember that when I computed the school management effects on pages 7 and 8, I did try to use all of the national data. That gives us a more -- that gives us more precise estimates, essentially.

We're just using more observation, so we understand better the relationship between a parent's education and a child's education.
That relationship is not terribly California specific. The effect of having a mother who is more educated is pretty much the same across the United States. It doesn't vary tremendously from state to state.
So it is helpful to have more data to estimate that relationship, because then you do a better job of figuring out what the school management effects are.
So I'm trying to estimate the school management effects as well as I possibly can. And in order to do that, I want to make use of as much data as possible to estimate relationships like the relationship between mom's education and a child's student performance, and get that relationship right.
Similarly, on pages 11, 12 and 13, I use all of the data from the National Educational Longitudinal Survey, because I want to get the apportionment of variation in students' scores as correct as possible.
I could do this using just data from the State of California. And what I would find would be similar results with a lot more noise. By "noise," I mean that the -- I would be less sure that, say, family variables

explained 93.4 percent of the variation. I would probably have -- it might vary more between, say, 87 percent and 98 percent.
So I would get a less precise estimate. Probably I would get an estimate in the same range. I'm not sure it would matter from -- for what we're doing here. Probably would not be sufficiently different to be interpreted differently.
Q. For this regression, the regressions you used and discussed on pages 11 and 12 from the NELS data, did you control for students' initial achievement?
A. Yes. Well, I want to be sure. No, I did not. You're interested in why or --
Q. Sure.
A. The reason is that it would raise the amount that was explained by family variables.
Q. And that's a bad thing because -- and so -- or that just --
A. It's not a bad thing, but in these graphs we can see that family variables is already explained a lot of the variation in student scores.
Most people, when they look at these graphs, are impressed by the relatively small amount of variation explained by small input variables and neighborhood variables.

I don't think that it is useful particularly to make the point even more clear by having the family variables take up more of the total pie, and adding the students' own prior achievement would be -- would have been somewhat controversial here.

It would have to be included under family variables, because it is something about the student, but it might also be a variable that picks up the prior effects of neighborhoods and schools; and therefore, some of it should -- some small percentage of it would probably need to be allocated to those other categories.

That's a complicated thing to do, a complicated thing to explain, and I didn't -- didn't think I needed that to make my point, but it would have made the graphs look probably more extreme, not the other way around.

I'd be glad to explain that further, but it is kind of complicated exactly what I would have done.

Q. I am satisfied with your last answer, but I'm happy to, if you have more that you feel like you need to add, I'm happy to have you do that.

A. No.

Q. Okay. Thank you. On -- for the NELS data analysis that's discussed on pages 11 and 12, you used the twelfth grade data; is that correct?

A. Yes.

Q. And that's just because that's what you happened to use for that study; is that right?

A. That's correct.

Q. For the same reason for the last data analysis you chose tenth grade, because you had to choose one; here you chose twelfth grade, because you had to choose one, right?

A. Yes. I think in that study, I either showed both tenth and twelfth, or there was another reason for choosing twelfth. I think the reason for choosing twelfth was that there were other parts of the study that talked about twelve graders, so it made sense to choose twelfth.

Q. When you say "in that study," what are you referring to?

A. This study, "If Families Matter Most."

Q. I see. So the discussions from pages 11 to 12 comes from research that you did for that paper, "If Families Matter Most"?

A. That's correct.

Q. Locking at Exhibit 6, if you will, and specifically directing you to the page marked State-Ex-CH 51 --

A. Yes.

Q. -- these are the table notes that accompany the

regression discussed on page 11 to 12. Do you see in the section on school input variables at the bottom of the page, reference to percentage of teachers in the student's school who are certified in their teaching area?

A. Correct.

Q. What does certified mean in that phrase?

A. These are -- literally I am quoting the question from the NELS. The NELS asks teachers, what is your main teaching area. And then it asks the teachers, are you certified in that main teaching area in this state. And it's the answer to that question.

Q. And that's -- it's because it's a national data it's -- the term is certified, whereas in California it would have been credentialed; is that correct?

A. Yes.

Q. For the regressions discussed on pages 11 to 12 of your report, it's correct, isn't it, that you also were unable to use facilities indicators because there aren't objective facilities indicators in the NELS, save the two that you already identified for me; is that correct?

A. I don't think the right answer is that simple. If I had thought for even a minute that using facilities indicators would have made a difference, what I would

have done was matched the NELS to state -- data from state administrative sources on facilities, and put that data in.

I have never seen, in any multivariate regression, facilities variables like that make a difference. So I suppose I didn't do that, but I would be glad to do it. It would be easy to do. It wouldn't make any difference.

MS. LHAMON: Off the record.

(Discussion off the record.)

BY MS. LHAMON:

Q. Likewise, in the regressions discussed on pages 11 and 12 of the expert report, you also do not include an independent variable for whether students had books to use in class or at home also because that information is not reflected in the NELS; is that correct?

A. It's not collected with objective measures in the NELS.

Q. Thanks. In the answer you gave to the question I asked before this one, you told me that if you had wanted to look at facilities indicators, there's another source that you could have linked the analysis to.

Is there another source that you could link the analysis to to include indicator variables to whether students have books that's objective?

A. Not as far as I know.
Q. In the data discussed on pages 11 and 12, what percentage of the variation is explained?
A. I can give you an estimate. It's not going to be the same for all of the regrssions. Of course, I could give you the exact number if I -- if I could consult my computer.
Q. Before you go further, I can offer that we can put a place maker in, and when you get the transcript to correct, you can feel welcome to insert the exact number. Is that okay?
A. I would do that then.
Q. Okay.
(Information requested:_____
_____.)
A. The explained variation in student's test scores is usually quite high. It's -- for a regressoni like this, it would be around sixty percent.
And then for variation educational attainment and incomes, it's going to be lower just because by the time a person is 33 years old, the effect of his or her school, family background and the neighborhood while he or she is growing up is only now part of why it is that he earns a high income or she earns a low income, or whatever.

So, typically the explained variations for educational attainment would be something around 0.4, 40 percent at the variation, and for incomes it would be lower, around 0.3, 33 percent of the variation.
Q. Okay. And we'll just put a marker, so that if you want to check it, you can add in the exact number.
A. I will do so.
Q. Okay. Thank you. Similarly, for the NLSY data discussed -- oh, I think you just gave me -- I was going to ask the same question for the NLSY data on 12 and 13, but you've just given me the answer for that.
A. Yes.
Q. Okay. Thank you. Like the NELS data analysis you've done for this expert report, similarly the NLSY data analysis cannot be replicated without restricted use access; is that correct?
A. It's quite easy to get the restricted use access. I think the state -- I would be extremely surprised if the plaintiffs' experts do not have that restricted access among at least -- at least one of them does not have their restricted access for both data sets.
Q. And why is that?
A. Because these are the two most commonly used longitudinal data sets in the United States.

Q. I should have asked you, I'm sorry, the table notes that you've included which are Exhibit 6, they include the full list of the variables that you used for each of the regressions?
A. Yes.
Q. Turning to, on Exhibit 6, it's marked at the bottom State-Exp-CH 530, these are a list of variables you used -- and I'm sorry, it continues onto the next page, 54 -- that's a list of variables that you used for the NLSY data regressions; is that correct?
A. Correct.
Q. In the list of school input variables, which is on page 53 of Exhibit 6, there's not a list of facilities variables again. Am I correct that that's because those variables, objective variables for facilities are not included in the NLSY database?
A. That is correct.
Q. And likewise, objective variables for the number of -- for whether students have access to books in class and at home also is not included in the NLSY database; is that correct?
MS. DAVIS: Object to form.
MS. LHAMON: I meant objective if I didn't say that. Thank you.
THE WITNESS: There are no such objective

variables. And putting in the subject of ones -- would be very much a mistake, in part because it would probably pick up all the things that are not school related policies.
Again, I think -- I don't -- I'm not making these graphs just for the purpose of this report. I have to do things in such a way that it were to withstand the scrutiny of my peers.
If I were to put in a variable like that, people would say to me, that is not a legitimate school policy or school input variable.
So -- and there are no such -- there are no objective variables like that in the United States. So it's -- it's unclear to me -- it's a strange question, because it's asking whether I would do something that I could not do correctly.
BY MS. LHAMON:
Q. I take it that people would say to you that those are not appropriate variables, because they're not objective; is that correct?
A. Not only because they are not objective, but because what they would likely pick up is something about students' family background, as opposed to policy.
If I wanted to understand the effects of state policy or school policy vis-a-vis textbooks, I would

need to put in policy variables, not variables like what students did with their textbooks. Those are two different things.

Q. I may have been unclear. When I have asked about whether there's an objective variable included in the database for whether students have books to use at home or in school, I didn't mean whether the books were tattered, I meant whether there was a book in any quality of form. Does that change any of your previous answers?

A. No, not really. Because whether a child gets to bring a book home from school is not a -- tends to be -- is never a state policy in any state in the United States. It is usually a discretionary decision on the part of teachers or principals based on their experience with students bringing books back to school in the condition which they bring books back to school.

It's just not a policy variable. And because it's not a policy variable, it's impossible for me to think about how it would appear on a survey as a policy variable when, in fact, it's just not.

Q. And what's your basis for the statement about what the decision is usually based on?

A. Well, we know that no state has a policy that says children may not bring home textbooks, or children

must bring home textbooks. Therefore, it cannot be a state policy, at least at this point.

We also know from surveys of administrators, that administrators who make the decision that children should not bring home textbooks appear to make that decision based on their experience with loss of textbooks or damage to textbooks typically. That's not surprising.

Q. Are you aware of any other reasons why students might not be able to take textbooks home for homework?

A. Controlling for the original budget for textbooks.

Q. No. I meant, are you aware of any other reasons?

A. Well, of course, if you had no textbooks, then you couldn't bring them home, but I think that's why you want to look at the number of books in the school or the textbook budget. That would be -- those would be your policy variables.

Once you're conditioned on whether the books were there at all, the variation on whether or not you could bring them home would be typically a function of the principal's or the administrator's experience.

Q. And that's based on the surveys?

A. Yes.

Q. Okay. Thanks. The NLSY regressions that you ran also did not include as an independent variable for the number of credentialed teachers in the student's school; is that correct?

A. The percentage of teachers in the student school have a masters degree was measured, but not the percentage of teachers who were credentialed.

Q. And is that because that the credential variable does not exist in the NLSY database?

A. It just does not exist in the NLSY database.

MS. LHAMON: Okay. We're at a good stopping point for today.

(Discussion off the record.)

MS. LHAMON: Counsel and I have just talked briefly off the record, and I believe we agreed, and Lynne, please correct me if I'm wrong, that Professor Hoxby should have 45 days from receipt of the transcript to make any changes that are necessary; and that she will transmit those changes to the court reporter.

And that the court reporter will notify all other parties.

MS. DAVIS: Agreed.

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I, CAROLINE M. HOXBY, do hereby declare under penalty of perjury that I have read the foregoing transcript; that I have made any corrections as appear noted, in ink, initialed by me, or attached hereto; that my testimony as contained herein, as corrected, is true and correct.

EXECUTED this ___ day of _____, 2003, at _____, _____.

_____

CAROLINE M. HOXBY

Volume 2

STATE OF CALIFORNIA)
: ss
COUNTY OF LOS ANGELES)

I, the undersigned, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that any witnesses in the foregoing proceedings, prior to testifying, were placed under oath; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; further, that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney of any of the parties.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: _____

_____
GINA CANGIAMILA
CSR No. 10256