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Are Resources Important? (Testimony of Eric Alan Hanushek, March 11, 1996)

Eric Alan Hanushek, *Professor of Economics and Public Policy, University of Rochester*

Hanushek was a witness for the state of Missouri in the areas of school finances and the impact of educational spending on achievement. He was first examined by the state's attorney, John Munich.

- MUNICH: Dr. Hanushek, can you give us a little background on your work and the project you did for this case? When did you first become involved in this matter?
- HANUSHEK: In October of 1995.
- MUNICH: And what was your mission?
- HANUSHEK: I was asked to analyze whether it was possible for the St. Louis school system to operate a quality school system within the revenues that were projected under the state transition plan [which would phase out the state's financial support for desegregation].
- MUNICH: Okay. And [how did you] go about undertaking this analysis?
- HANUSHEK: Well, I began with some intensive discussions with the State Department of Education people on what revenues and student populations they expected to have in the future. I also worked with the state department to talk about. . .what kind of alterations, particularly in meeting different class sizes, were possible and under the state school improvement plan and what the implications of [such alterations would be] for the size of the school district.
- MUNICH: Did you examine revenue information?
- HANUSHEK: Yes, I did.
- MUNICH: For [the] state and for the district?
- HANUSHEK: Yes. . .For the main analysis that I did, I had revenue projections into the future. I also have some past information on spending in districts outside of St. Louis.
- MUNICH: . . .Did you also have some information on expenditures?
- HANUSHEK: . . .I [had] information on expenditures.
- MUNICH: . . .And was there anything else that you looked at in coming to your conclusion?
- HANUSHEK: I had some general background information, both reports of the state on the school districts in Missouri over some time in the past.

[I] had information on the Missouri school improvement plan. I had some more detailed budgetary information for the city school district. That was the main information that I used.

- MUNICH: I think you also mentioned [the] state's transition plan.
- HANUSHEK: Yes, I did.
- MUNICH: Now, did you also look at any enrollment projections?
- HANUSHEK: Yes, I did.
- MUNICH: And could you just tell us what enrollment projections you looked at?
- HANUSHEK: Well, there were two separate enrollment projections that I looked at. One was . . . prepared by Robert Black, and a second one that was prepared by the State Department of Elementary and Secondary Education. [Black's] projections [include] an estimate of the rest of the school population that changes over time, and the [state's report] basically [includes] a projection of the base number of students that would be available for or need schooling in St. Louis.
- MUNICH: . . . And what's your understanding generally of the [state's] transition plan on which your conclusions are based? . . .
- HANUSHEK: The transition plan that lies behind the estimates calls for a phase-out of the quality education fund over a three-year period. It has a return of the transfer students from the county back to the city school district and the commensurate return of some of the people from the county back to their home school districts. And the time path of that is that students are allowed to complete the school they're in, and then they return, with a few that would not—that would just be paid for at the end of the three-year period.
- MUNICH: Okay. And what about the funding that goes directly to the St. Louis school district currently?
- HANUSHEK: Their funding. . . for the quality education program would be reduced. Full funding next year, and then reduced a third each of the subsequent years. . .
- THE COURT: That's your understanding, is that correct? I thought the funding for the first year ended this year.
- MUNICH: That's correct. . .
- THE COURT: And then a third off next year, and then concluded the following year.
- HANUSHEK: Thank you, Your Honor. I got off one column. . .
- THE COURT: But you're saying that. . . actually there are only. . . three months left in this school year, [isn't that what you are] talking about?
- HANUSHEK: Yes, for the most part, my projections only begin next year. . . I counted no changes for this year in my calculations and none of my fiscal calculations involved this current school year. They all begin next year.
- THE COURT: So you are talking about two years, then?
- HANUSHEK: Yes, for the quality education funding. The transfer program, I believe, takes a little bit longer to get the students back from the

transfer program. . .

MUNICH: Dr. Hanushek, . . .once you gathered the information that you just described, can you just. . .generally give us an overview of what you did?

HANUSHEK: Well, the fundamental question that I looked at was whether the revenues that were projected under the phase-out plan, and what would be expected under the normal funding of the school district, would be able to cover any expenditures in the somewhat altered operation of the school district. What I analyzed specifically was what would happen if the school district went to the standards laid out in the Missouri School Improvement Plan for class sizes—they're not considerably below the standards that are laid out for accreditation in [the] school improvement plan—and what would happen if they moved to that. From that, I calculated the expenditures that you would expect into the future and compared this to the revenues. Secondly, to try to understand whether that was a reasonable projection, I compared the expenditure streams from that exercise to what's being spent in districts outside of St. Louis and Kansas City—in other words, the rest of the state of Missouri, to see whether that would all be feasible, in the ballpark, for what other people were doing.

MUNICH: Okay. Now having done all that work. . .do you have an opinion as to whether the St. Louis public school system would be financially viable in the absence of state desegregation funding with the ending of the voluntary interdistrict transfer program?

HANUSHEK: Yes, I do.

MUNICH: What's your opinion on that?

HANUSHEK: With the transition plan that was laid out, the school district could in fact be viable and could in fact maintain a quality education system with the revenues that are projected.

MUNICH: All right. And what are your conclusions as to the St. Louis public school system's level of financing—expenditure, revenue—compared to the rest of the state?

HANUSHEK: Well, compared to the rest of the state, even under this tightening that would involve increasing class sizes, the city school district spends considerably above, like 50% above, per eligible student. Districts elsewhere in the state grow into the future, and while that comes down a little bit in the projections I did because I allow other school districts to go [up] and hold St. Louis at a constant level of spending, [St. Louis] remained noticeably above other districts on into the school year 2001 and 2002, which is where my projections [extend].

THE COURT: Do you know where Missouri stands in its funding of schools outside the St. Louis school district and outside the Kansas City school district? Where it stands nationally?

HANUSHEK: . . .I didn't compare the districts outside nationally, but nationally St. Louis [and] the whole state of Missouri [are] still below the

national average.

THE COURT: What's the national average?

HANUSHEK: Well, the national average is about \$5,500 per student now, I believe.

THE COURT: And Missouri is below the national average?

HANUSHEK: Missouri will be below the national average.

THE COURT: And is that good, or is that bad?

HANUSHEK: I don't think that that's an easy question to answer because it depends upon the performance that's being achieved out of the school system. Funding is a very, very imperfect measure of the quality of the school system, and it takes a lot more analysis to say whether Missouri is better or not. Unfortunately, you don't have good performance data on students to make the direct comparisons very well on Missouri and other states. So sometimes spending low is a sign of strength and goodness, and sometimes it's a sign of weakness.

THE COURT: But you don't know whether it's strong or weak here?

HANUSHEK: I cannot say that given available data that we have nationally.

MUNICH: Dr. Hanushek, you mentioned earlier in doing your comparison that you excluded [the] Kansas City school district. Can you tell us why [you did] that?

HANUSHEK: Well, Kansas City is subject to the same kind of extra spending from the state for desegregation purposes, and that skews its statistics quite considerably. In fact, Kansas City[s] spending is noticeably above St. Louis, and St. Louis is noticeably above the average of every other district in the state.

MUNICH: Now the St. Louis suburban districts also receive some desegregation funding, is that right?

HANUSHEK: That's right.

MUNICH: You didn't exclude them?

HANUSHEK: No, I did not exclude them largely because they're a small part of the total in the rest of the state, so that it's not going to affect them too much. What that [means is] that the school districts in the state actually look a little bit stronger than they are because I've given them this extra funding that will stop if the transition plan goes into effect, so that the rest of the districts in the state will look slightly worse by comparison. . .

MUNICH: If you take the desegregation funding out of the suburban districts, it would have made the St. Louis system comparatively stronger?

HANUSHEK: Yes, it would widen the gap between what is being spent in St. Louis and the rest of the state.

MUNICH: Now, Dr. Hanushek, you mentioned under your projections and conclusions that the [funding for the] St. Louis public school system, even assuming the phase-down of the desegregation plan, would still be higher than the statewide average for other schools, but isn't it true that the St. Louis Public School System has a higher percentage

of at-risk students to educate?

HANUSHEK: Absolutely, it is.

MUNICH: Aren't at-risk children more expensive to educate?

HANUSHEK: Yes, we generally presume that you have to put more resources into those students. . . . The current state funding formula weights free and reduced-[price] lunch [eligible] students at an extra 20%, so any district with a large proportion of [those] students will get larger state funding than otherwise would be calculated by the formula.

MUNICH: Free and reduced-[price] lunch status—is that something that is commonly used to identify at-risk children?

HANUSHEK: Yes.

MUNICH: Now in your analysis and in your conclusions, Dr. Hanushek, have you taken into account the fact that the public school system in St. Louis has a higher proportion of more-expensive-to-educate, at-risk children?

HANUSHEK: Yes. I did a special analysis to try to see whether the disproportionate numbers of free and reduced-[price] lunch [eligible] students in St. Louis across from the rest of the state could be responsible for the differential in spending that I project. That special analysis takes into account [that] in 1994 and 1995, 82% of the St. Louis school system students were free and reduced-[price] lunch [eligible], where for the rest of the state the average [was] only 31%.

If you do the calculations and allow for a 50% premium on spending for the at-risk students, you still find that there's a gap of what St. Louis spends over the rest of the state for disadvantaged students. So if you compare disadvantaged students in St. Louis to disadvantaged students in the rest of the state, St. Louis, well into fiscal year two, will be spending more, some 25% more, for the at-risk students. And it will also be spending some 15% more for non-at-risk students. . . . Even assuming that there is growth in the spending outside of St. Louis. . .

THE COURT: . . . Is that a fair statistic to get into, though? . . . Let's say they're spending more in St. Louis than they are out-[of-]state, and they aren't spending near enough out-[of-]state. Does that necessarily mean [that] they're spending more in St. Louis is a good statistic?

HANUSHEK: Well, I have trouble judging absolute level of spending here. It relates back to a prior question, Your Honor. All I can say is that, given the current status of this case, disadvantaged students outside of St. Louis and Kansas City would seem to be really hurt. They are getting much less spending than if they were moved into St. Louis or Kansas City. And if that could be translated into programs, they're the ones that are really disadvantaged.

THE COURT: Yes.

HANUSHEK: But [at] the absolute level, maybe. . . we should spend more. I might prefer more; you might prefer more. I have trouble saying where to draw any line. I'm just doing [a comparative analysis] of what is it like to be a disadvantaged student in terms of spending if you

are in St. Louis versus other places.

THE COURT: But the fact that you might spend 15% more in St. Louis for disadvantaged students [compared to] disadvantaged students in other districts really doesn't mean anything if the disadvantaged students out-[of-]state are not getting near enough.

HANUSHEK: I agree with that, Your Honor. That's where we have no absolute standard to say what should be spent on disadvantaged students. What those calculations do incorporate, though, is much higher extra spending on disadvantaged students than most people normally use. You're saying that disadvantaged students should receive 50% more funding than advantaged students, which is more than I think most school districts would ever think of actually spending in terms of the actual allocation of resources. So it is very much weighting all spending for disadvantaged, beginning in the rest of the state and in St. Louis. The absolute levels may or may not be large enough. . .

MUNICH: Dr. Hanushek, you [earlier] mentioned the weighting that you used, the 1.5 weighting. Could you just explain that a little bit since we've gotten into it?

HANUSHEK: Yes. Many states recognize that it may cost more to educate disadvantaged students, and so they, in their normal funding of local districts, have some weighting factor for disadvantaged students. Maybe 20 states out of the 50 have an explicit weighting for disadvantaged students. [That is,] you get a bonus from generally 10% to 40% more spending for a disadvantaged student than you get for a regular. . . student in the districts. For my calculations, there's no very good study to say exactly how much more [it costs] to educate a disadvantaged student than another student. . . I took a large proportion, 50%, just to make sure that I was not in fact getting into the range of disagreement. . . about what is appropriate for the funding of disadvantaged students.

MUNICH: In fact, that's the weighting that one of the school boards [has] to produce, isn't it?

HANUSHEK: Yes, it is. That weighting appears in some of the analyses of Dr. Alexander¹. . . I think it's about 20 [states] that have explicit statements of extra funding that goes to at-risk students, but it's very complicated. Each of the 50 states has [a] very different funding formula, so that it is not possible to adequately characterize what each state does. . . Missouri adds an extra 20% onto its funding formula. . .

MUNICH: Dr. Hanushek, in your opinion, assuming that extra state desegregation financing would end and that [the voluntary interdistrict transfer] program would end, would the St. Louis public school system still be able to offer a sound education to its students?

HANUSHEK: Yes, I believe so.

MUNICH: How would that fund out? . . .

¹Hanushek is referring here to Dr. Kern Alexander, whose trial testimony is presented in this issue of the *JNE*.

- HANUSHEK: That relies, in part, on the previous analysis of comparisons with other spending in the state. But more than that, it relies on my previous [dissertation] work that investigates the effects of altering class size—average class sizes—on student performance. And simply put, the weight of evidence over now almost [a] 30-year period. . . suggests that there's no real relationship between changes in the class size and in student performance. . . I have to qualify that, of course, and we'll get into that, but within the range of policy that we're talking about—15 to 40 students in a class—there's no specific relationship between the size of the class and what students learn. This suggests that if we were to allow the St. Louis school system to increase its average size to the accredited standard set out in the Missouri Improved School Plan, we should not expect it would affect the quality of education.
- MUNICH: Now some small class sizes below the 15 to 40 range are educationally appropriate, aren't they?
- HANUSHEK: Oh, absolutely. Both below that range and within that range, variation in class size may be educationally appropriate, but maybe [in] a number of instances where small classes, even individual tutorials, are appropriate and useful. It's just [that] there are a lot of other circumstances where they don't have much effect, and so, on average, they balance out. But good administration should in fact be looking for the cases where the smaller classes are really effective [to balance] against those [where they] don't make much difference.
- MUNICH: Your assumptions generally are that the class size would increase somewhat in the St. Louis public school system, but. . . do your assumptions also leave some small class sizes in place in the district?
- HANUSHEK: Oh. . . the explicit calculation in fact retains some of the small specialized magnet programs. The calculations are based specifically on the St. Louis schools and the courses that are being offered, but they retain some of the smaller specialized courses. That, I think, is a policy matter for the district to decide—whether those are appropriate or not—. . . but I haven't removed those at all.
- THE COURT: Excuse me. Where they have reduced the class sizes in the nonintegrated schools, are you saying it doesn't make any difference whether they're nonintegrated schools or not, as far as the size of the class?
- HANUSHEK: To the best of the research knowledge we have, it does not make a difference. There's not a specific situation where you get much more effect of small classes than others.
- THE COURT: Okay, because in St. Louis. . . the theory is they're supposed to have [a student/ teacher ratio of] 20 to 1 in the nonintegrated schools, and I guess 28 to 30 to 1 in the integrated schools. You say that is not a good program—[that it] doesn't benefit anyone?
- HANUSHEK: On average, we would not expect it to be very beneficial. . . . On average, it costs a lot more than any beneficial effects we would get, and the school district could do better by rearranging those resources in other ways, in my opinion.

MUNICH: Dr. Hanushek, the conclusions that you testified to generally just now, are those contained in what's been marked as Exhibit 166 and 167, which are your December 1995 and January 1996 reports?

HANUSHEK: Yes, they are.

[Hanushek next went into detail about the St. Louis public school systems' budget, based on the average daily membership (ADM)—that is, enrollment—and on the numbers of "eligible" students—that is, those in actual attendance (87% of ADM in St. Louis), desegregation funds, and certified staff. He also explained his proposal for reducing the system's expenses, noting that the Missouri School Improvement Plan utilizes two different standards for class size: one a minimum standard; and the other a desirable standard, with about 5 fewer students per class. By his calculations, Hanushek explained, if the St. Louis public schools employed the minimum standard, it could reallocate 579 teachers, using them to teach returning transfer students or discharging them, thereby saving 16% of the budget for teachers' salaries and related expenditures. The desirable standard, he noted, would allow for only 273 teachers to be reallocated. Hanushek also introduced a "midpoint" standard between the two that he theorized would reallocate 462 teachers. He presented charts showing that, at the minimum and midpoint standards, the St. Louis school system would run surpluses, depending on enrollment projections. By contrast, he showed that utilizing the desirable standard, the city's schools would run an increasing deficit every year after academic years 1996–97 or 1997–98. Using any of these standards, he concluded that St. Louis would still be spending more per pupil than other school district in the state excluding Kansas City, even taking into account his estimate that at-risk students cost 1.5 times more than other students. At this point, Judge Gunn asked Hanushek what effect he believed such actions would have on quality of education provided to St. Louis schoolchildren.]

HANUSHEK: Well, from both my own research and my attempts to compile an appropriate research [consensus from the work] of everybody else who's worked on the subject. . . , I conclude that there is not a very close relationship at all between class size and student performance, or, in fact, between variations in the resources we commonly measure in schools and in student performance.

MUNICH: Can you describe to the court the research that you've done in this area?

HANUSHEK: Yes. My own research, which is also typical of the other research that I reviewed, attempts to look across school districts and see whether school districts that have smaller classes [and] higher teacher/pupil ratios tend to get better performance out of their students. Now this research is a little bit complicated because of the fact that education occurs not only in the schools but in the homes and the outside of schools. So we have to allow for the fact that some students come to school better prepared than others. That is, in fact exactly what was behind the previous. . . assumptions that disadvantaged students come to class less prepared than more advantaged students and [thus require more attention from] the school district.

The research attempts to sort out the details on student achievement, and because this is complicated by family differences and so forth, it relies on sophisticated statistical techniques. But the real answer is a very simple question: What is the net effect of changing teacher/pupil ratios or class sizes on performance that we can predict? The research has used data on the schools from the Coleman

Report [1966] and from other school systems and also incorporates research done by large numbers of other researchers. So my summary includes not only my own work, research, but the work of a larger number of other researchers.

MUNICH:

How many studies did you look at?

HANUSHEK:

Well, I can find a total of 277 separate estimates of the effects of teacher/pupil ratios or class sizes on . . . student performance. Student performance in these cases [is] measured by a range of things from standardized test scores to continuation to college to subsequent performance in the labor market. So we have a variety of measures of outcome, but there are 277 separate estimates that I could find that are published estimates in books or journals that provide sufficient information. . . to compile them about their effects that were available by the end of 1994. . .

[Hanushek produced a chart of his findings.]

THE COURT:

You didn't make a study. . . of integrated schools on student/teacher ratio as compared with nonintegrated schools, or did you?

HANUSHEK:

In these 277 studies will be a number that looked at [ratios] across those schools. None of these studies explicitly or specifically related to St. Louis schools. They are studies. . . that include schools at different grade levels and different parts of the country. Some of them probably include information from St. Louis students, but. . . none of them are explicitly on St. Louis.

THE COURT:

But did you make a specific comparison of nonintegrated schools as compared with integrated schools and the classroom size?

HANUSHEK:

I have in my own work. . . [as] part of the [dissertation] work that I did [in 1968],² and that specifically is in there. There are several other studies that concentrate on—not quite the same terminology. . .

THE COURT:

Okay, but I don't care whether it's St. Louis or not. . . . Are you saying, yes, you did make a comparison?

HANUSHEK:

Yes.

THE COURT:

Where is that? Show me.

HANUSHEK:

I have not explicitly identified that. That is a small number that concentrates on the differences in class size, teacher/pupil ratio, by the racial composition of the school, but there are much larger numbers that incorporate that in the analysis. They don't do a specific comparison, one-by-one, but they [do] incorporate how class size affects achievement after taking into account the degree of integration in the school. . . . The work from my [dissertation does this], and there are several other studies that explicitly look at the effects

²It should be noted that Hanushek completed his dissertation in 1968. Despite the Supreme Court's ruling in *Brown v. Board of Education of Topeka, Kansas* (1954), many states and localities offered "massive resistance" to school desegregation. Indeed, little meaningful desegregation of public schools occurred, particularly in cities of any size, until the Court's decision in *Swann v. Charlotte-Mecklenburg Board of Education* in 1971. Although private plaintiffs, the U.S. Department of Justice, and the U.S. Department of Health, Education and Welfare won findings of educational discrimination, getting effective remedies that really desegregated schools was another battle, launched in earnest during the 1960s and 1970s.

on integration or racial composition of schools.

THE COURT: And you say you don't have those statistics here?

HANUSHEK: I have not separately broken them out because they are not as easily summarized.

THE COURT: But you could have taken nonintegrated schools and compared them with integrated schools?

HANUSHEK: Yes.

THE COURT: But you don't do that specifically.

HANUSHEK: I didn't, and there's a reason for that, Your Honor, because when people have looked at the effects of racial composition in the schools, they have found that school resources have about the same effects, or non-effects, in integrated and in nonintegrated settings. . . . Most of the analyses have not shown that there is a distinct difference in the education that goes on in integrated and nonintegrated. . . schools. Therefore, for most of these summaries and resources, people tend to summarize over all the different levels of integration because that has not shown to be a powerful interactive effect.

THE COURT: Well, what you've done, as I understand it then, is you've just taken all the schools. . . and you made your study and made a determination. . . that there really isn't a significance in the school or the teacher/student ratio, but you haven't broken it down into integrated and nonintegrated schools? Is that correct?

HANUSHEK: That's correct. . .

THE COURT: And you've said that there's no difference between a classroom size of 15 students to one teacher as opposed to 40 students to one teacher with the quality of education?

HANUSHEK: We usually don't observe entirely that range. . . . We observe change of between 5 and 10 students—that range—and there's no consistent effect. . . between 5 and 10 students as opposed to 15. We have a lot of studies that go to the full 15, but within [that] range sometimes we find that students in the larger classes do better. Sometimes we find [students] in the smaller classes do better, but there's no consistent, coherent pattern. . . that is related to class size.

THE COURT: And in your own thinking, regardless of your statistics, would you be stating here that 40-to-1 classroom size. . . would overall make no difference to the 15-to-1 student/teacher [ratio], and you're saying that to the court? You want the court to believe that?

HANUSHEK: Absolutely, I want the court to believe that.

MUNICH: Dr. Hanushek, I just want to make [something] clear for my own understanding. The results that you have observed with respect to the effect of teacher/pupil ratio on student performance, [do they] differ when the schools that we are looking at are predominantly African American schools?

HANUSHEK: No, [in] the studies that I've done specifically myself, you find no relationship between class size and student performance in all-White schools or in all-Black schools, and this is looking at performance of both White students and Black students, and not at the extreme end, but [at the] very low percentages, so that the effect of class size on performance is not at all related to the racial composition of the schools in the studies that I've done myself.

THE COURT: You understand that the court is under an obligation, [a] directive from the [United States Court of Appeals for the] Eighth Circuit to have a 20-to-1. . .[student/teacher] ratio [as the standard] classroom size in the nonintegrated schools? Do you understand that?

HANUSHEK: Yes, I do.

THE COURT: And you're saying that's not a meaningful requirement?

HANUSHEK: I'm saying actually more than that—that it's not only not meaningful educationally. That it is wasteful. If those funds were used for more productive purposes, we could get a lot more in those circumstances. . . . Now the conventional wisdom that I think is guiding many of your questions, Your Honor, is completely encapsulated in the 15% of the studies that [indicate] a positive effect of teacher/pupil ratios [as being] statistically significant. . . . Eighty-five percent of the studies either [maintain] the opposite effect. . . or [assert that class size is] statistically insignificant.³ . . . Thirteen percent of the 277 studies actually suggest that larger classes lead to higher student achievement. . . . I think what the results, taken as a whole pattern, say is that there's no evidence that making marginal changes, small changes in class sizes within the range of common conventional policy, has any effect.

THE COURT: Well, the difference between 15 and 40 is substantial. . .

HANUSHEK: . . . [M]ost of the studies don't actually have that complete range within individual studies, but they will have between 20 and 30 [students to a teacher] in a study, and within 20 and 30 in many studies there [is] no effect or the opposite effect.

[Hanushek went on to explain the range of variation between the court-ordered, MSIP-mandated minimum and desirable ranges of teacher/pupil ratios he had examined in his budgetary analysis.]

THE COURT: Are you saying that, [on] average, the lower classroom size is harmful to the students in achieving education goals?

HANUSHEK: These studies are finding that. I'm saying that I see no reason to believe that there's any systematic relationship between class size—and we're talking about in the court case or in the studies. [I] haven't seen any important effects of class size other than those on cost. . .

THE COURT: What harm could come from—let's say [a] 10-to-1 student/teacher classroom size, as opposed to [a] 50-to-1 [ratio]?

HANUSHEK: Your Honor, I am not going to argue that the negative findings are in fact the right findings. What harm could come. . . [in a] larger

³Later in his testimony, Hanushek revised this statement to note that the rest of the studies had results in which one could not have much confidence statistically.

policy sense, is that the students [would] get exactly the same education with only 10 students in [a] class as opposed to 50, and we spend that much on that particular. . .

THE COURT:

You are just talking about cost, then?

HANUSHEK:

Your Honor, cost seems to be a central issue in this case of whether. . .the school district can in fact operate a quality system in the face of the return of the transfer students and the revenue implications for the transition plan. I am saying that I see no reason to expect any effect on student performance from changing class size [to] the range that we're talking about, but that there are substantial savings in funds that are available.

Now to go even further, Your Honor, I do not think that the school system should. . .across-the-board. . .raise all class sizes or lower all class sizes. I am firmly convinced there are some situations where small classes [that] involve particular students, particular teachers, [and] particular subject matters where small classes are very good. I'm also just as firmly convinced that there are situations where large classes have no impact but could lead to substantial cost savings.

[Hanushek went on to suggest that it was better to spend money to ensure that there was "a higher average quality teacher in the classroom." However, he did not explain how he believed that objective could be accomplished, noting that teachers prefer smaller classes. In answer to a question from Judge Gunn about comparisons between states, specifically Missouri's falling below the average, Hanushek maintained that no simple relationship existed between level of state spending and student achievement.]

HANUSHEK:

My studies suggest that if you met the phase-out of the transfer program and [implemented] the whole transition plan by pursuing a policy of tightening—in the sense of moving up to the state standards on class size—it would have no effect on student performance, but it would allow the city school district to live within the revenues they're projecting.

[Hanushek was next cross-examined by Kenneth Brostron, attorney for the St. Louis city board of education. Brostron asked Hanushek whether he was aware that Missouri ranked 41st among the 50 states in educational spending. Hanushek responded that he believed Missouri was ranked 37th or 38th.⁴ In further questioning, Brostron established that in compiling his findings, Hanushek had not visited any schools in St. Louis nor talked to any teachers, school board members, superintendents or staff at the State Commissioner of Education; nor had he looked at the details of how the school budget was spent. Brostron also pointed out that Hanushek had never taught at the elementary or high school level—his teaching experience was entirely at the college level—and held no degrees in education.]

BROSTRON:

So. . .would you recommend to [Education] Commissioner Bartman that they take [the pupil/teacher ratio] part of the MSIP standards out of the book?

⁴During later cross-examination, John Gianoulakis, attorney for the suburban St. Louis school districts of Mehlville, Pattonville, and Ritenour, explained that Missouri ranked 48th in 1983, but subsequent desegregation funding provided to St. Louis and Kansas City brought the state to its current rank of 41st. Gianoulakis pointed out, however, that Missouri ranked around 25th or 26th in terms of per capita income.

HANUSHEK: Yes, I would. . .

THE COURT: When you are talking about [this] recommendation. . .are you talking about classroom size or. . .student/teacher ratio?

HANUSHEK: I'm talking about class size, Your Honor. . . I'm talking about basically the standards on the inputs and resources that go in [to schools] as opposed to performance of students, which is more relevant. . . I think performance goals [should] be strengthened at the same time [that] the input standards or resource standards. . .[should] be eliminated. [I think] that the school system would be much better off by emphasizing student performance [rather] than how much is spent.

[Brostron next asked Hanushek how he would improve teacher quality, given that he had stated this aspect was most important. Hanushek responded that effective staff development might help, but he also maintained that staff development did not necessarily improve performance. He suggested that providing incentives to teachers for improved student performance might also help, noting that these incentives need not necessarily be monetary. They might, he added, take the form of "providing more resources to teachers, providing more opportunities to go on trips, to observe other places," and so forth.]

Brostron reminded Hanushek that he had earlier maintained that St. Louis could save 16% of its budget by increasing class size, reallocating 579 teachers and perhaps discharging those not needed to teach returning transfer students, and reducing related expenditures proportionately. Afterward, he asked Hanushek to identify what specific related expenses would be reduced: textbooks, special education, or Title I programs. Hanushek rejected each of these suggestions, and explained instead that once class sizes were increased, some schools could be closed, thereby reducing the number of counselors and librarians as well as security expenses. Hanushek disagreed with Brostron's assertion that closing schools might increase transportation costs. He subsequently indicated that he did not really mean that the school system's budget would be reduced by 16%; rather, he meant that returning transfer students could be accommodated without adding to the budget. He also noted that his projections had not taken into account the likely 3% increase in per pupil expenses due to inflation.]

[Hanushek was next cross-examined by William L. Taylor, attorney for the Caldwell/NAACP plaintiffs. Taylor asked Hanushek to respond to the arguments raised in an article by Hedges, Laine, and Greenwald (1994), who have criticized his position on the lack of correlation between resources and performance. In response, Hanushek noted that he agreed that some decreases in educational expenditures can have an adverse effect on student learning, and that some increases might yield improvements. However, he indicated that he knew of no studies offering firm evidence that more preschool programs, all-day kindergarten, or college preparatory programs would be sound investments. Taylor next asked Hanushek to explain the significance, if any, of the fact that 81.9% of St. Louis schoolchildren received free or reduced-price lunches compared to the statewide average outside St. Louis and Kansas City of only 31.37%.]

TAYLOR: Are you aware of research that shows that there are much more severe effects [on student performance] when poverty is concentrated?

HANUSHEK: I don't know of any studies that show [where] the concentration, over and above the number of minority students, is important.

TAYLOR: You are not familiar, for example, with the larger study that was done in. . .the *Prospects* study in conjunction with the re-enactment of Title I?⁵

⁵Taylor is referring here to the 1993 interim report of the *Prospects* study; the final (1997) report of this study is reviewed in this issue of the *JNE*.

- HANUSHEK: I am aware of some of the earlier findings. I have not looked at the final results. I looked at intermediate findings, and I [don't] remember [that it] emphasized any concentration over and above the number of needy students.
- TAYLOR: So. . .let's take a hypothetical situation. You have a classroom of 30 students. . .in a suburban out-[of-]state district, [and] there are 10 poor children. . .and let's say you have a classroom of 30 students here in St. Louis, and all 30 are free and reduced-price lunch [eligible]. Would you say that the costs of meeting the educational needs of the students in St. Louis would be. . .no more than three times the costs of meeting the special needs of the children in the out-[of-] state district?. . .In other words, a third of [the] class is poor in one instance and 100% of the class is poor in another instance, and I'm asking you whether you think that the costs of meeting the needs of the 30 students would be—I think you used the word "linear"?. . .Would [those costs] be three times as much?. . .
- HANUSHEK: My presumption is that it would be linear, so [there] would be three times as [many] extra costs in the St. Louis school.
- TAYLOR: . . .[Don't you] think that a teacher facing a classroom of 30 poor children, some of whom might come to school hungry, might have various kinds of problems, might have a situation that is not in direct proportion to. . .
- HANUSHEK: I have no evidence on that, and the most common approach is to do this linearly. I know that, for example, the analysis of achievement done by William Trent in this case says that the effect of poverty is linear [with respect to] the percent [of] poverty.⁶ I know that the analysis of expenditures done by Dr. [Kern] Alexander says that it is linear [in terms of] the number of extra students, and so it is very common. . .
- TAYLOR: Are you aware that in the re-enactment of Title I, [an] alternative formula was adopted [that] weighted. . .[the effects of poverty] much more highly as. . .much more concentrated poverty [occurred]?. . .⁷
- HANUSHEK: No, I'm not aware of that. . .
- TAYLOR: Judge Gunn asked you about class size and integrated or nonintegrated schools, and you said you've done some work on that. Is that correct?
- HANUSHEK: I said I had looked at Black and White achievement in schools with varying racial compositions, and [had found] the same effect in schools with different racial compositions—some of which are virtually all Black or virtually all White—and for Black and White students, and that I did not find any effect of class size in any of those circumstances.

[Taylor continued this line of questioning and asked Hanushek whether he was aware of studies

⁶Dr. Trent's testimony also appears in this issue.

⁷Children who receive free or reduced-price lunches assigned a weighting of 1.2—in other words, they are counted as 120% of a student for purposes of state per capita funding.

showing that poor Black children respond more positively to reduction in class size than do other schoolchildren. Hanushek responded that he was familiar with the work of Summers and Wolfe (1977) and Finn and Achilles (1990), but had not included them in his summary of 277 studies because they employed entirely different methodologies.]

[In the following exchange, Hanushek is questioned by Charles Oldham, the attorney representing the St. Louis Teachers Local 420. Oldham asked Hanushek to focus on the class-size provisions of some contracts between teachers' unions and school boards.]

OLDHAM: Now you said that quality teachers are essential to academic achievement. Is that correct?

HANUSHEK: Yes.

OLDHAM: And class size is important to teachers, is it not?

HANUSHEK: Most teachers, yes, indeed, would rather have smaller classes than large.

OLDHAM: And if you are going to get quality teachers, you are going to have to accommodate some of their needs in terms of their work environment. Isn't that fair?

HANUSHEK: Well, hiring quality teachers depends upon both the compensation and other attributes of the job, so they all enter in. Yes.

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