

PROFESSOR GROSSMAN: Thank you so much, and thank you so much for inviting me to be here today. It's certainly an interesting time to be at one of the major teacher unions and to be thinking about, again, the profession, what's happening to the profession, how we prepare people for teaching, and what happens to them when they leave teacher preparation.

I was asked to talk about the work I've done most recently on teacher preparation. This is work that I did with a group of economists, Susanna Loeb, Jim Wyckoff, Hank Lanford, and Don Boyd. And so I'll be representing this work today, and I thought I'd focus on two components of this work, work about teacher selection and teacher preparation in New York City Schools. And what we were particularly interested in is looking at how features of preparation relate to teachers' subsequent impact on student achievement.

So let me go through a little bit of an overview of the talk. I'll tell you a little bit about the Pathway Study, focusing particularly on selection and preparation, and then talk about some of the implications of this work and the next steps we went, because this was already a few years ago, and now we've been moving forward actually into teacher observation protocols and are now working with the Met Study. And then I'm hoping that during the question-answer period, we can talk a little bit about implications for the NEA.

So let me tell you a little bit about the Pathway Study. How many of you know about this work or have read about it? So some of you know this. What's most interesting, one of the things that's, I think, really interesting about this is how it began. So the work actually began with Nick Michelli, from the City University of New York, approaching the group of economists, Susanna Loeb and Jim Wyckoff among them, and asking them if they would be willing to look at how teachers were prepared to teach in New York City Schools.

So this actually originated with a question from the CUNY system. And then they approached the economists. And the economists said, well, we'd be happy to do it. We know about teacher labor markets. We actually don't know anything about teacher education. So they asked me to be part of the team as well. So from the outset, I think it was an interesting partnership among CUNY, among researchers, the New York State Department of Ed, and the New York City Department of Ed, as well as all of the institutions who participate in the study.

One of the things that we learned early on is how difficult it actually is to do this kind of work that links teacher preparation to outcomes for both students, in terms of student achievement, and teachers, in terms of teacher retention. It takes a lot of people working together to get there. And the union had to sign off on this as well.

One of the things that I always like to start with is sort of the conceptual framework because I think people underestimate how difficult it is to make these linkages between either what teacher education does and student achievement or what teachers do and student achievement, because there's a huge range of factors that all play into student outcomes. So this just gives you a broad picture. We are most interested in this issue of teacher preparation, Pathway, that comes over here.

But the preparation, again, is influenced by the state requirements, by what perspective teachers bring into that. And then what teachers do in classrooms is also related to school context, to students, so it's, you know, I don't have to tell you, it's a very complex picture. And making these kind of connections requires that you somehow have to account for all of these different characteristics. The way economists have done this is using value-added methods, and we'll talk a little bit about that.

But again, one of the main problems in looking at issues of teacher preparation is also one of selection. Who enters into these roots is not random, right. And the people how enter teaching through different routes often may have different characteristics as well. So any work that tries to disentangle that has to pay attention to that. So what did we do? We spent a lot of time collecting data. We collected program-level data from the 18 institutions that prepare the majority of teachers for New York City Schools.

One of the exciting things about doing this kind of study was really working within a single labor market. So here you have a huge district that hires a lot of teachers, and you have a number of different programs and institutions that are feeding into that school system. So we were able to actually learn about the majority of the programs that prepare teachers for this school system.

So we interviewed program directors. We interviewed the heads of field placements. And we collected documents. So many of these programs had gone through NCAD(?) accreditation, so we looked at the NCAD documents if we could. We looked at the materials they had. We collected syllabi. We surveyed faculty. So we had a lot of data on these various programs.

In addition to the data we collected from the programs, we surveyed graduates of these programs. So in the spring, at the very end of their program, in 2004, we went to those different institutions and surveyed the participants and then did follow-up surveys on those who weren't there. And then in the spring of 2005, we actually surveyed all 6,000-plus new, first-year teachers in New York City Schools.

And in that survey, and these surveys are all available online, we asked them about their preparation, about the kinds of opportunities they had, where they had student taught, something about the school context in which they were working, how they had ended up in that particular school. That was the year that New York City had required mentoring for its teachers, for that one year. So we also asked a lot of questions about their experiences in mentoring and asked them as well about school context, administrative support.

So we had a lot of data from those first-year teachers. We also did a survey in the second year and also surveyed people who had left because we were interested in those issues of attrition and retention as well.

And finally, the group of economists I worked with had assembled a very rich dataset of administrative data that was able to link teachers with information about their qualifications and their experience in education, their certification exam. So you'll see some of this data coming up. They were also able to link teachers and students, which you need to do in order to be able to do these kind of value-added models, so we had that data. And we also had data on schools and on the students in those schools, okay.

So it was an incredible database, and it actually took the economists, you know, years to put together the administrative data in order to do these kinds of studies. We used value-added measures. I'm not an economist, so I'm not going to speak a lot

about this. But I've learned a lot about value-added measures from working with my economist colleagues.

But I just wanted you to see the general specification. The group of economists I work with actually use multiple specifications, and they only trust the results that work across multiple specifications of value-added models, right, so not a single specification but multiple. And again, partly what they're looking at is achievement as a function of, and they look at the prior achievement of students, student characteristics, classroom characteristics, characteristics of teachers in some of the models, not in others.

And in many of these specifications, we also look at school-fixed effects. So we're only comparing teachers who come from different programs who are teaching in the same schools. And again, because we work in New York City, you can actually do this because there are so many teachers, so many schools, okay.

So let me talk a little bit about the two questions I'm going to look at. And one is the teacher-selection question. How do teacher qualifications influence student achievement, and then what aspects of teacher preparation influence student achievement as well? My clicker is not working, so I've got to stay here.

One of the things that we looked at, during the period of 2000 to 2006, we looked at the ways in which people came into teaching and teachers' qualifications and particularly at this issue of teacher sorting, right. Historically, teachers with lower qualifications were going to the highest-poverty schools, okay. And my colleagues have written quite a bit about this phenomenon of teaching sorting.

So if you take a look at this, you see teacher qualifications by school poverty decile, and you'll note that in the lowest-poverty schools, only 12% of the teachers failed the certification test, the last test, on their first try, whereas, in the highest decile, 34% failed on their first try. Only 4% of the teachers in the lowest-poverty schools are not certified to teach. Almost 22% of the teachers in the highest poverty. So these are tremendous differences in terms of the teacher qualifications in schools with, particularly in the high-poverty schools.

But there was a change during the period that we were doing this work, which I think is notable. And that has to do, again, with the shift. So what you see here is that the school poverty level, how much percent of teachers, changed so that there was a big difference by the lowest-poverty and the highest-poverty schools. And then towards 2005, those began to converge.

And you see it as well here. So now we look again at these teacher qualifications by poverty level. Can people see this? And what you'll see is that teachers in the highest-poverty school in 2000, again, you'll see these big gaps in their qualifications. By 2005, there's been a reduction in that gap, sort of across the board. So you'll see, again, the ones that have had less experience, the percent who failed, that 22% gap goes down to an 11% gap. So there is less sorting of teachers with lower qualifications into higher-poverty schools in this five-year period.

This is notable. And in fact, I didn't bring the slide, but it actually is related to some improvement in math achievement in these highest-poverty schools as well. And again, you can see, if you look just at new teachers, they pretty much, this is, again, the failure rate on the last if they failed it the first time. And you can see that by the end here, they're pretty much all the same, right. So what happened?

Again, because, I think, improving the quality of beginning teachers is both an issue of selection and preparation, we want to look at what happened regarding sort of selection. So in 2000, there were a lot of teachers who were not certified to teach, who had temporary licenses. And in 2000, the Board of Regents basically put an end to that and said we can't have any more teachers who do not have certification to teach. Because they still needed a lot of teachers, they created alternative pathways into teaching and its first cohort of the Teaching Fellows.

Now New York State actually has very high standards for alternative certification. Teachers who are going through alternative certification actually have to complete the same set of requirements as teachers who are going through more traditional university-based programs of teacher education. They just have longer in which to, they have two years, while they're teaching, to complete those.

In 2003, they eliminated the temporary-license teachers, and teacher salaries also increased during this period. So you know, again, we can't make a causal link between any one of these policies. But clearly, during this time, New York began to be more selective of the teachers who came in. And teachers with higher qualifications were going into the higher-poverty schools.

This is probably driven in part by New York City Teaching Fellows, which is the largest alternative-route program in New York City, and those teachers do, in general, have higher qualifications. So that's the selection picture.

During the same time, we were looking at preparation and how people were prepared. Our first paper on this looked actually at Pathway and compared teachers who were entering through traditional university-based pathways to those who were entering from alternative certification, particularly TFA and the New York City Teaching Fellows. But we were interested as well in looking at whether or not features of teacher preparation across pathways could be related to student achievement because, again, that gives you a level for change.

If you know that some characteristics of preparation are strongly related to student achievement, then you can think about reforming teaching education to make sure that it has those kinds of characteristics. So we felt that this is a way of sort of getting at issues of reform in teacher education and understanding better what we need to be doing in preparation to support teachers in their first couple of years of teaching.

During this time, the 2000 to 2005, there was, as I mentioned, an enormous change in how people were coming into teaching. You'll notice that that red line is the Teaching Fellows and TFA. It goes from basically nothing in 2000 to being a significant preparer of teachers during this period. And the blue line is the traditional college-recommending route. And you'll see that they go up. There was a huge demand for teachers between 2003, 2004.

So it's not that we were preparing fewer teachers through the college-recommending route, right, so basically what's happening is the Teaching Fellows and TFA are replacing teachers who were teaching on temporary license, who weren't actually certified, okay, so that's important.

One of the first things we looked at is whether, actually, I have to stop. It wasn't one of the first things we looked at. When we started this study, we promised not to look at program effects because in order to get institutions to buy into the study, they said, we don't want this to be a horse race. We don't want you to be comparing us. So

we don't want you to look at program effects. So we didn't, in fact. And that's one of the reasons we looked at pathways and we looked at features.

By 2006, the programs actually were being pressed to show their effectiveness by NCAD and by others. So then they came to us. They said, now we want you to do the program effects. We want to see, you know, how we're doing. So then we did this program-level analysis. We're not making, obviously, the names of the programs public, but we gave programs their own data so they could look at how effective they were.

And each of these blue dots represents a program. And what you'll see in this axis is math achievement. And the y-axis is ELA. And so the programs are plotted by how effective they were on both their graduates' impact on math and ELA.

And so what you'll notice is that there are a lot of programs that, you know, sort of cluster around here. But there are a few programs that are producing much more effective teachers in both math and ELA. And in fact, we found there was a pretty strong correlation, about .7, between the math and ELA achievement of students from these different programs. And you'll see there's some programs that are not doing so well. You might not want to hire their teachers.

So we did find, while most programs were sort of clustered together, that there were some variations by programs in terms of the achievement of their graduates. And they weren't necessarily what you might think. Again, so everybody has a bet on which were the more or less effective programs. Not necessarily what you might think. But there was a spread. So again, when we talk about the reform of teacher education, it's important to recognize that there's variability in the quality of the programs and in the quality of their graduates.

But what we were really set out to do was to look at, again, the features of preparation that mapped onto student achievement. What were the programs doing? Because that was what we felt we could learn from the most. And as I mentioned, we did both the program analyses, asking the programs for the data, and surveying the graduates so we could look at those two different points of data about these programs.

As I mentioned, this particular brief that you have focuses specifically on the preparation of elementary teachers. So this is looking at the childhood education programs. There are 31 programs that we looked at that were nested within 16 institutions. So one of the really striking things, and we've written another paper on this, called *Surveying the Landscape of Teacher Preparation in New York City*, one of the really interesting things about the teacher education context is how many programs there are. We actually documented over 100 programs in these 18 institutions.

Many of these institutions were offering traditional university-based childhood education at the undergraduate level, at the graduate level a teaching fellows program, and some of them were also offering the TFA program, as well as maybe a TOPS(?) program that was a CUNY program. They were offering multiple programs that were in essence competing with themselves. I mean, it's a really complicated and interesting landscape.

Here we focused on 31 of the childhood programs. Twenty six of them were traditional university-based programs. Five of them were alternative route. Let me tell you what we counted as a program. TFA, we only focused here on the pre-service

component of the program. TFA, because they do their own pre-service in the summer, we count it as one program.

The New York City Teaching Fellows actually contracts with universities to run the programs, so we counted those each as a separate program by institution, because, in fact, they receive different preparation, right. Even though they were all part of the same pathway, there was a lot of variability in terms of what they received depending on which institution they went to.

And we looked at five different aspects of teacher education, building on the research on what matters in teacher education. We looked at program structure. We looked at how people were prepared around learners and learning. We looked at subject-specific preparation for teaching ELA and math. We looked at preparation for teaching ethnically and linguistically diverse students. And we also looked at the structure and nature of field experience, including the schools where people were placed for student teaching, okay.

We had a Excel sheet with, I'm trying to remember how many variables we had. We had so many variables when we started documenting. Then we realized we had to quantify all these variables to be able to fit into these equations. It was an enormous task, and I had a lot of very able doctoral students and post-doctoral students helping me with this. We all learned a lot doing this.

So let me just give you an example for what some of the spreadsheet looked like. So in those interviews, for example, we asked people who's primarily responsible for selecting the cooperating teachers, right? Is it the program faculty? Is it the school administrator? Or is it the candidate, right? So that was one of the things that we tried to ascertain.

We also asked if the program had a requirement for minimal experience for cooperating teachers. Some programs say you have to have at least three or four years of teaching before you can be considered to be a cooperative teacher. Other programs had no requirements.

And we also looked at the number of times that supervisors were required to observe candidates. Now again, we're working in a context in New York where there are a lot of requirements actually around these things. And there was a minimal number of times that programs had to have supervision occur. So basically, we were looking for variability around that set requirement, right. Some programs, you know, a lot of programs did what was required. Some programs did quite a bit more.

One of the interesting things about doing this in New York is because there were a set of uniformly, rather high requirements, there wasn't a lot of variability, for example, around English methods classes, English Language Arts Methods classes. The state required six credits, which is quite a bit, and everybody had six credits. Some had a little bit more, but generally, people complied with that.

Okay. So let's take a look at some of the results that we found. We were looking particularly at features of teacher education that were related to the work of teaching, the practice of teaching. And what we found is that teacher education programs that required a capstone course, and this capstone course could have been an action research project, a case study, a portfolio. Most of the capstone projects we looked at actually engaged students in looking at their teaching in some way or another. So they were very connected to practice.

And in fact, having a capstone course was related to their subsequent impact on student achievement in both ELA and math. I actually wouldn't have predicted this. I was surprised by this, that it held up. The second thing that seemed to be a very strong predictor was the oversight of student teaching. So remember all of those things I said, who chooses the cooperating teacher, minimal experience, number of, all of those we put together into a single factor that we called programmatic oversight of student teaching.

And that, again, was correlated particularly with student achievement in math and a little bit in ELA. The percent of tenured faculty who were teaching the methods classes was not associated with achievement in ELA, was somewhat associated with achievement in math. And again, that could be a proxy just for how the institution valued teacher education because . . . faculty in math education are actually a rather scarce commodity. So if they were teaching in teacher education, it might have meant something about that program's commitment rather than to the faculty themselves.

And the number of required math courses that people were required to take actually did connect to student learning in math, okay. So that was the data that we, we kept the data separate. These were the data that we collected from the program.

The second set of data I'm going to present to you are from the surveys. So as I mentioned, we surveyed all those first-year teachers. You can get them at our website. We have both the 2004-2005 surveys up there. 2005 had a subset. It was a very long survey. We trimmed it down when we wanted to ask all of these other questions.

But in these surveys, we tried to get as close as we could to what people had actually experienced in teacher education. So we asked them about opportunities to analyze student work, opportunities to understand the New York City curriculum in English and math, opportunities to learn about the teaching of fractions. I mean, we had a whole set of questions that really tried to get them to rank what they did, as opposed to their perceptions of how prepared they felt.

Many surveys of teacher education will ask, well, how prepared did you feel? In year one, we did ask some of those questions, but we had many more questions that asked about, what did you actually do in teacher education?

So let me go through, again, some of these variables so you understand what the findings are. For practice, these were sort of the opportunities to engage in practice during preparation. We looked at how much opportunity did you have, for example, to listen to an individual child read aloud as part of your preparation for teaching reading, for analyzing student math work, or to plan a guided reading lesson? All of these things, we thought, were very connected to the work of teaching, as opposed to learning things that were more about reading or about math.

We also looked at their opportunities to review the math or language arts curriculum of New York City. We asked about the extent to which they had student teaching opportunities, right, from zero to, you know, extended opportunities for supervised student teaching. And finally, we looked at the congruence between where they were placed for student teaching and the job they ultimately got and whether or not they were similar in terms of grade level, for elementary teachers, or subject matter, and that is truer for middle school and secondary teachers, okay.

So what did we find? In math, what we found is that these variables, the opportunities to engage in the work of teaching, the practice, the opportunities to study

New York City curriculum, and the congruence of their student teaching placement and the first year in terms of grade level, were all pretty strongly correlated with their students' achievement in math at the end of their first year.

No student teaching was negatively correlated. But one of the things we found that was, again, a little bit counterintuitive was that more student teaching wasn't necessarily correlated with better achievement, in part because I think that's where the quality of student teaching starts kicking in, right. There's so much variability around the quality. But having no student teaching at all was negative. And remember, this included alternative routes, and the alternative routes also required some form of student teaching, mostly in summer school, okay.

Opportunities to learn about English language learners were somewhat correlated, but it didn't hold up when we did it separately. And opportunities to learn about classroom management and handling student misbehavior, not strongly correlated. ELA was a different story. It was interesting that these results differ a little bit for math and ELA.

What we found is that results held up, but only for people who went through college-recommending programs, right. So what we look at on the left there is the whole sample. That includes people from the alternative routes and college recommending. And on the right, just the college recommending. And there you see that, again, in practice and curriculum both hold up as related to student achievement, but the other variables don't.

So what do we conclude from this? First of all, I think it's important to say that this was one of the first studies, if not the first study, to try to make this link between aspects of teacher preparation and subsequent student achievement of those graduates. It's a difficult link to make. There's a lot of noise in all of this. But I think it's important to, again, as somebody who cares about teacher education, to begin to understand better what we could be doing to prepare teachers for the demands of teaching.

I'm really struck by the fact, for example, that there were programs that were producing teachers that had the same effect as a second-year teacher. We know that first-year teachers generally have a negative effect on student achievement. These programs were producing people who basically leaped over that to perform like second-year teachers. If one program can do that, more programs could be doing that, right.

So one of the things I think I take from it is that there is variation, and there is, in the analysis of the features, some understanding of some of the features that make a difference. We knew that field experience is important, but trying to figure out what aspects of field experience make a difference for students and trying to, again, use those to inform the reform of teacher education.

And as I said, there's also an indication that some programs are producing much more effective teachers, and some, few, are producing much less effective teachers and that that has to, again, when you think about the schools that are hiring them, that's important information when they bring those people into their schools as well.

I guess what I'm interested, in terms of the policy implications of all of this, is how do we produce more first-year teachers who could have a positive impact on student achievement? How do we get more good teachers and more good teaching into the

schools? And that seems to me to be the central question of teacher preparation, not how do they get there, right, not which pathway, but how in those pathways are we preparing people so that they're much more effective when they start in that first year?

Again, there's that example of the programs that had graduates that performed like second-year teachers. The other, you know, I think striking thing about our findings was that it was the opportunity to engage in practices that were similar to what you'd be doing as a teacher that were most predictive of student achievement gains later on.

We're talking a lot right now about practice-based teacher education, teacher education that is grounded in the work of teaching and that prepares people to be, from the outset, better prepared for the kind of things they're going to be doing when they walk in the door of their classroom in that first year. How do we identify those practices that are most linked to student achievement and then make sure that in teacher education, we're giving novice teachers the opportunity to develop their skill in those areas?

And that's really kind of where we've headed next. So following this work, I was describing this a little bit at breakfast, we actually went into the classrooms and observed particularly English Language Arts teachers because you notice that teacher prep and teacher characteristics are less predictive of student achievement. Went in to say is it the classroom practices that are most explanatory of differences in student achievement, and can we identify a set of practices that could then be the basis for teacher education, right?

If we know, for example, that some of the things that we found, for example, explicit-strategy instruction, have a strong relationship to student achievement, then wouldn't you want teacher education programs and professional development to be focusing on those practices and ensuring, again, that people are able to enact those at high levels of quality?

You know, I'm also interested in this, how we've gone from knowing that teachers matter and that teachers are the most important factor in student achievement, once you parcel out socioeconomic status, how we've gone from that to focusing only on firing the weaker teachers and not preparing stronger teachers. It seems to me if we know teachers matter, then the sensible policy implication is invest in teachers. Invest in teachers, invest in their professional education, invest in their professional development.

And again, part of in the question-answer, I'm hoping we can talk a little bit about the role of NEA in sort of moving the conversation towards this emphasis on practice and preparing people for the demands of practice and supporting teachers as they learn to do what's a very complex job, a very difficult job, and a job that changes, depending on the context in which you're teaching as well.

So I'm just going to tell you a little bit about the work that we have started doing, following the pathway's work, and then I'll stop. So essentially, based on the pathway's work, as I mentioned, we went back into New York City classrooms. And this time, what we did is we identified English Language Arts teachers at the middle grades, because we have value-added data for them, and we had the economists choose basically pairs of teachers in the same school, half of whom were at the highest value-added cortile, and half of whom were in the second-to-lowest cortile.

We decided that we weren't going to look at the first-cortile teachers. We just looked at the second and the fourth. The economists gave us the names of the teachers in the schools, and we went in to observe, not knowing who was who. And at this point in New York, the schools didn't know who was who either. Now it might be different. And going in to observe, we ended up having to develop a classroom observation protocol, which we called PLATO, the Protocol for Language Arts Teaching Observation, named by my middle-school daughter.

Yeah, she was, we did this around the dinner table. I said, we got to call this something. What are we going to call it? What are we going to call it? And Sarah came up with it. She's very proud of that. Because it turns out that there were no structured observation protocols that focused on secondary ELA, which surprised us. We did not expect to be developing, as a matter of, we did not put that into our timeline, into our budget, anything. But we ended up having to develop this and went into these classrooms.

And again, part of what we had to do in order to develop that protocol was to identify, from the research at this point, what are some of those core practices that we think make up high-quality ELA teaching. So in essence, what you're doing is taking good teaching and breaking it down into component parts and giving names to those parts. I call these core practices. My colleague Deborah Ball calls them high-leverage practices. But the idea is the same.

Let's identify practices that are high leverage, both in terms of their impact on student learning, but also high leverage in terms of their impact on teacher development, right, because if you can learn to do these things well, you will get better, right. And then use those as the basis for both professional development and teacher education.

So I gave you the example of explicit-strategy instruction. This has been something that's been identified in the research in reading and writing as very important. It was in our protocol. And when we went into observe, explicit-strategy instruction is one of the best predictors of student achievement in our protocol, strongly related to the teachers' value-added cortile.

The interesting thing, and maybe the more discouraging thing about this, is it's also very rare. We didn't see a lot of it. But when we saw it, again, you saw greater student learning. So this, to me, gives, you know, a great opportunity to think about professional development, right. How do you then use these examples of what high quality strategy instruction looks like to help more teachers develop that in their own practice?

And teachers' uptake was another in classroom discourse. The quality of how teachers picked up and used students' ideas or thinking was another, again, in the research, something that you can identify and something that people can get better at, because I believe that teaching, like many other aspects of human performance, is something people learn to do and can get better at.

But they only get better at it when they have opportunities for what Erickson calls delivered practice, right, just sort of this notion that you're focusing on things that are challenging or difficult. You're given opportunities to what does that look like and to practice it as well. So I guess my own hope is that we can begin to develop both teacher education programs and professional development around these core practices

and have a practice-driven system of professional education. So I think that is the end. So let me stop there and take some questions.