



# 2009 Teacher Preparation Program Impact Analysis

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## Joint Legislative Education Oversight Committee

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UNC General Administration  
Gary T. Henry, UNC at Chapel Hill  
Charles L. Thompson, ECU



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# A Strategic Priority of the University

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- UNC Overall Priority: *Preparing More and Better Teachers and School Leaders for North Carolina Public Schools*
- Key Strategies to address the goal:
  - Recruitment
  - Preparation
  - New Teacher and School Leader Support
- Research approach to address quality preparation:
  - Entry Model, Persistence Model, and Impact Model(s)
- The UNC Impact Research Model will be presented today



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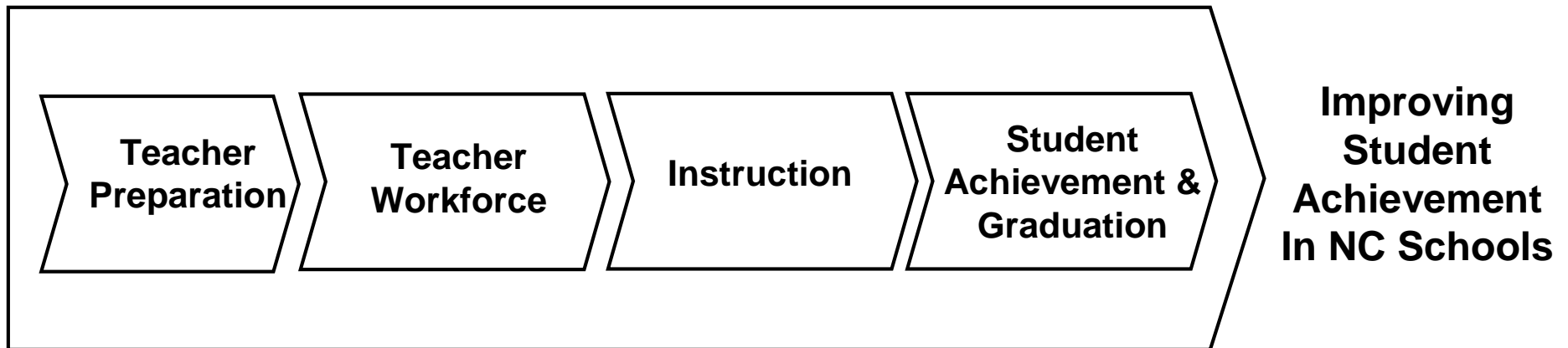
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# Connecting Teacher Preparation & Student Achievement



## “Why Prepare More & Better Teachers & School Leaders?”



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# Connecting UNC Teacher Preparation Programs to Student Achievement in North Carolina

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- In the 1990s, NC led the nation in advances in student achievement
- In the 2000s, student achievement in NC has leveled off
- In 2007-08:
  - about 1/2 of 3<sup>rd</sup>-8<sup>th</sup> graders scored proficient in both reading and mathematics, far fewer of the poor students (1/3) passed
  - about 2/3 of the high school students passed their End of Course examinations, and
  - only 70% of high school students graduated in 4 years.
- Increasing student achievement requires improving the quality of the teacher workforce
- UNC teacher preparation programs must be part of the solution by preparing more and better teachers for NC public school classrooms



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# Research Approach



- Research team from UNCGA, UNC Chapel Hill, and ECU developed the approach which was discussed with education deans and other campus leaders, assembled data, and produced results
- Data for this analysis comes from UNC institutional data files and NC Department of Public Instruction data files.
- The impacts of UNC graduates teaching in NC schools on student achievement have been calculated and shared with campus leadership and other education leaders in the state
- UNC institutions prepared approximately 1/3 of the 86,434 classroom teachers serving in NC public schools in 2007-08



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## Sources of North Carolina Teachers 2007-08



Sources of NC Teachers	Count	Percentage
1. UNC undergrad prepared	27,386	32%
2. UNC graduate degree	2,351	3%
3. NC private undergrad prepared	10,498	12%
4. NC private graduate degree	396	.5%
5. Out of state undergrad prepared	20,250	23%
6. Out of state graduate degree	4,986	6%
7. UNC licensure only	559	.6%
8. Other licensure only	541	.6%
9. Teach For America	258	.3%
10. Visiting International Faculty	667	.7%
11. Lateral Entry	12,164	14%
12. Unclassifiable	6,400	7%
<b>TOTAL</b>	<b>86,456</b>	

## UNC Traditionally Prepared Teachers Practicing in North Carolina Public Schools in 2007-2008

University	Count	Percentage	University	Count	Percentage
ASU	5,413	20%	UNCA	371	1%
ECU	4,987	18%	UNCCH	1,488	5%
ECSU	604	2%	UNCC	1,873	7%
FSU	970	4%	UNCG	2,999	11%
NC A&T	613	2%	UNCP	1,501	5%
NCCU	741	3%	UNCW	2,100	8%
NCSA	1	.00%	WCU	1,980	7%
NCSU	1,148	4%	WSSU	597	2%

**Total: 27,386**



# Overview of the Impact Model Analysis



## Data for the Impact Model Analysis:

- High school end of course tests in 8 subjects (483,269 test scores in 25,981 classes) in 2004-05 and 2005-06;
- Middle school reading (367,950 scores in 22,907 classes) in 2004-05, 2005-06, and 2006-07;
- Middle school mathematics (389,246 scores in 23,091 classes) in 2004-05, 2005-06, and 2006-07;
- Elementary school reading (354,195 test scores in 42,170 classes) in 2005-06, 2006-07, 2007-08; and
- Elementary school mathematics (346,925 test scores in 28,933 classes) in 2005-06, 2006-07, and 2007-08.







# Overview of the Impact Model Analysis (continued)

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## Impact Model Analysis:

- Teachers with 10 or fewer years experience
- Models estimate gains in student scores
- Models account for numerous variables that are beyond the control of the teacher preparation programs
- Models compare gains for teachers prepared by UNC teacher preparation programs with all other sources of teachers
- Fine grained analysis of two functions of teacher preparation programs – selection of students into the programs and training provided by the programs (often in conjunction with departments in arts and sciences)



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# Control Variables Used in the Impact Model



Other factors in the model to isolate the effect of UNC teacher preparations programs

Student	Classroom	School
<ol style="list-style-type: none"><li>1. Prior test scores</li><li>2. Classmates prior test scores (peer effects)</li><li>3. Days absent</li><li>4. Gender</li><li>5. Race/ethnicity</li><li>6. Poverty</li><li>7. Parental education</li><li>8. Gifted</li><li>9. Disability</li><li>10. Currently limited English proficient</li><li>11. Previously limited English proficient</li><li>12. Overage for grade (held back or retained at least once)</li><li>13. Underage for grade (promoted two grades)</li><li>14. Grade level</li></ol>	<ol style="list-style-type: none"><li>1. Number of students</li><li>2. Advanced curriculum</li><li>3. Remedial curriculum</li><li>4. Heterogeneity of prior achievement within classroom</li><li>5. Teacher characteristics (added to some models)</li></ol>	<ol style="list-style-type: none"><li>1. School size (ADM)</li><li>2. Suspension rate</li><li>3. Violent acts per 1,000 students</li><li>4. Total per pupil expenditures</li><li>5. District supplements</li><li>6. Racial/ethnic composition</li><li>7. Concentration of poverty</li></ol>





# Impacts of UNC Teacher Preparation



**Table 1: UNC Undergraduate Prepared and UNC Masters of Arts in Teaching Impacts on Test Score Gains vs. All Other Sources of Teachers (*out-of-state, private college, alternative entry*)**

	High School End of Course Exams	Middle School End of Grade Mathematics	Middle School End of Grade Reading	Elementary End of Grade Mathematics	Elementary End of Grade Reading
UNC Undergraduate Preparation	Slightly Better*	Neither Better nor Worse	Neither Better nor Worse	Slightly Better*	Slightly Better*
UNC Master of Arts in Teaching	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse

- *How much better is slightly better?*

In elementary mathematics, with the largest of effects, students in a UNC prepared teacher's class receive the equivalent of 4 days of additional learning within a school year compared to students with non-UNC prepared teachers





# Institutional Program Impacts at the High School Level



Number of Programs with Significant Positive and Negative Impacts by Test Area

	High School Overall	High School English	High School Mathematics	High School Science
Positive Impact	1 (NCSU)	2 (FSU, WCU)	2 (NCSU, UNC-A)	4 (FSU, UNC-P, NCSU, UNC-CH)
Negative Impact	1 (WSSU)	0	1 (WSSU)	1 (ECSU)
Neither Better nor Worse	13	13	12	10
Total Programs	15	15	15	15



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# Institutional Program Impacts at the Middle School Level



Number of Programs with Significant Positive and Negative Impacts by Test Area

	Middle School Mathematics	Middle School Reading
Positive Impact	1 (UNC-CH)	0
Negative Impact	1 (WSSU)	0
Neither Better nor Worse	13	15
Total Programs	15	15



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# Institutional Program Impacts at the Elementary School Level



Number of Programs with Significant Positive and Negative Impacts by Test Area

	Elementary School Mathematics	Elementary School Reading
Positive Impact	5 (ECU, UNC-C, UNC-CH, UNC-G, UNC-W)	2 (ECU, UNC-W)
Negative Impact	0	0
Neither Better nor Worse	10	13
Total Programs	15	15



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## Achievement & Other Important Teacher and Student Variables



	High School End-of-Course Exams	Middle School Math	Middle School Reading	Elementary School Math	Elementary School Reading
Out of Field Teaching	Slightly Worse	Worse	Worse	Worse	Slightly Worse
First Year Teacher	Worse	Worse	Neither Better nor Worse	Worse	Slightly Worse
1 to 2 Years Experience	Slightly Worse	Neither Better nor Worse	Neither Better nor Worse	Slightly Worse	Slightly Worse
3 to 4 Years Experience	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse	Slightly Worse
Advanced Degree	Neither Better nor Worse	Slightly Better	Slightly Better	Slightly Better	Neither Better nor Worse
NBC	Slightly Better	Neither Better nor Worse	Neither Better nor Worse	Slightly Better	Slightly Better
Praxis II Performance	Slightly Better	Neither Better nor Worse	Neither Better nor Worse	Slightly Better	Slightly Better
Students per Classroom	Slightly Worse	Neither Better nor Worse	Neither Better nor Worse	Neither Better nor Worse	Slightly Better
Advanced Curriculum	Better	Slightly Worse	Slightly Worse	NA	NA
Remedial Curriculum	Neither Better nor Worse	Neither Better nor Worse	Slightly Worse	NA	NA
Classroom Ability Dispersion	Neither Better nor Worse	Slightly Better	Neither Better nor Worse	Slightly Worse	Neither Better nor Worse
Classroom Peer Prior Achievement	Slightly Better	Slightly Better	Slightly Better	Slightly Better	Slightly Better



# Teacher and Classroom Influences on Student Achievement: Preliminary Findings

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1. Out-of-field teachers
  - students do worse than those taught by in-field teachers
  - more teachers prepared to teach reading, math & science could increase student achievement
2. Inexperienced teachers
  - first year teachers are less effective
  - second and third year teachers are slightly less effective in high school and elementary
3. Classes with high ability classmates
  - students gain slightly more
  - equality of educational opportunity is affected by each students classmates
4. Classes with classmates of mixed abilities
  - for the most part, students do neither better nor worse
  - students in mixed ability math don't perform as well in elementary but do slightly better in middle school
5. Masters degrees (all types included)
  - no effect on high school student achievement
  - slightly better in elementary and middle school







## Next Steps with UNC Research Efforts



- UNC research will be used to drive program improvements
  - Identification of promising practices & focused discussions with campus leaders
  - Roundtable discussions to identify next steps in the research and analysis
  - Assessing the impacts of different courses and preparation practices
  - Development of elementary mathematics program of study in collaboration with DPI and SBE for licensure recognition – elementary science is next
- Assessing the impacts of principals prepared by UNC Masters in School Administration (MSA) programs on achievement and other outcomes
- Comparing the effectiveness of UNC teacher preparation programs with other routes of preparation such as out-of-state, lateral entry, & Teach for America
- Continue to bring this research on UNC teacher and school leader preparation programs and the broader impact data/information to the legislature for oversight



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