AN ANALYSIS OF TEACHER PREPARATION, DEMOGRAPHICS AND STUDENT ACHIEVEMENT: DO INEQUITIES EXIST?

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Research Question:
According to results of the NAEP teacher questionnaire, how do teacher background variables impact students from different demographic groups?
UNIVERSITY MAJOR OF TEACHERS
Did you have a major, minor or special emphasis in any of the following subjects as part of your **undergraduate** coursework? Fill in one oval on each line.

Teachers responded with one of 3 choices
- Yes, a major
- Yes, a minor or special emphasis
- No

1. mathematics education,
2. mathematics,
3. other mathematics-related subject such as statistics
4. education (including secondary education)
5. special education (including students with disabilities)
UNDERGRADUATE MAJORS OF TEACHERS OF 8TH GRADERS: 2003 TO 2011

- Math Ed: 26, 24, 26, 54, 44, 3
- Math: 31, 26, 7, 44, 1
- Math-Related: 7, 44, 3
- Education: 54, 44
- Special Ed: 3
- ELL: 1

Categories: Math Ed, Math, Math-Related, Education, Special Ed, ELL
SCORES OF GRADE 8 STUDENTS DISAGGREGATED BY UNDERGRADUATE MAJOR OF TEACHER: 2003 TO 2011
UNDERGRADUATE MAJOR OF TEACHER DISAGGREGATED BY RACE OF STUDENT (GRADE 8 - 2011)
UNDERGRADUATE MAJOR OF TEACHER DISAGGREGATED BY SES OF STUDENT (GRADE 8 - 2011)
UNDERGRADUATE MAJOR OF TEACHER DISAGGREGATED BY ELL STATUS OF STUDENT (GRADE 8 - 2011)

<table>
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<th>Major</th>
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<th>Not ELL</th>
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<td>45</td>
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4TH GRADE TEACHER

- Did you have a major, minor or special emphasis in any of the following subjects as part of your undergraduate coursework? Fill in one oval on each line.

- Teachers responded with one of 3 choices:
  - Yes, a major
  - Yes, a minor or special emphasis
  - No

for 10 different possibilities: mathematics education; mathematics; engineering or engineering education; other mathematics-related subject such as statistics; reading, language arts, or literacy; English; other language arts-related subject; education (including elementary or early childhood); special education (including students with disabilities) and English language learning.
WHAT DOES THIS MEAN?

- Students in 8th grade do not have equal access to a teacher with a mathematics or mathematics education background.
- Students of some races (Blacks, Hispanics, American Indians), students eligible for free or reduced lunches and ELL students are less likely to have a teacher with a strong mathematics background.
UNDERGRADUATE MAJORS OF TEACHERS OF 4TH GRADERS BY PERCENTAGE: 2003 TO 2011

CERTIFICATION OF TEACHERS
WHAT DOES “ALTERNATIVE CERTIFICATION” MEAN?

The National Center for Alternative Certification
• Established in September 2003 - U.S. DOE
• Clearinghouse for information about alternative routes to certification in the U.S.

According to this site, “alternative routes to teacher certification are state-defined routes through which an individual who already has at least a bachelor’s degree can obtain certification to teach without necessarily having to go back to college and complete a college, campus-based teacher education program.”

http://www.teach-now.org
1985 – 2009: ALTERNATIVE CERTIFICATIONS

Number of Teachers Certified Through Alternate Routes, 1985-2009
8th grade and 4th grade teachers were asked:
Did you enter teaching through an alternative certification program?
(An alternative program is a program that was designed to expedite the transition of non-teachers to a teaching career, for example, a state, district, or university alternative certification program.)
PERCENTAGE OF TEACHERS THAT WERE ALTERNATIVELY CERTIFIED

- 4th grade: 9% (2009) vs. 10% (2011)
- 8th grade: 16% (2009) vs. 17% (2011)
SCORES OF STUDENTS DISAGGREGATED BY CERTIFICATION OF TEACHERS

4th grade

2009: Alternative Certification - 240
2011: Alternative Certification - 241
2009: Traditional Certification - 234
2011: Traditional Certification - 235

8th grade

2009: Alternative Certification - 286
2011: Alternative Certification - 284
2009: Traditional Certification - 277
2011: Traditional Certification - 278

2009: Alternative Certification - 272
2011: Alternative Certification - 274
2009: Traditional Certification - 276
2011: Traditional Certification - 278

Alternative Certification
Traditional Certification
PERCENT OF TEACHERS ALTERNATIVELY CERTIFIED DISAGGREGATED BY RACE OF STUDENT (2011)

Grade 4
- White: 6
- Black: 13
- Hispanic: 16
- Asian: 7
- American Indian: 6
- 2+ races: 7

Grade 8
- White: 12
- Black: 28
- Hispanic: 24
- Asian: 16
- American Indian: 14
- 2+ races: 15
PERCENT OF TEACHERS ALTERNATIVELY CERTIFIED DISAGGREGATED BY SES OF STUDENT (2011)

Grade 4
- Eligible: 12
- Not Eligible: 7

Grade 8
- Eligible: 22
- Not Eligible: 14
PERCENT OF TEACHERS ALTERNATIVELY CERTIFIED DISAGGREGATED BY ELL STATUS OF STUDENT (2011)

Grade 4
- ELL: 17
- Not ELL: 9

Grade 8
- ELL: 23
- Not ELL: 17
WHAT DOES THIS MEAN?

- Students in 4^{th} and 8^{th} grade do not have equal access to a teacher that entered teaching through a traditional route.
- Students of some races (Blacks, Hispanics), students eligible for free or reduced lunches and ELL students are more likely to have a teacher that is alternatively certified.
- Keep in mind, this represents just 2 years of data.
YEARS OF TEACHING EXPERIENCE
YEARS OF TEACHING EXPERIENCE

8th grade teachers were asked two questions:

Counting this year, how many years have you worked as an elementary or secondary teacher? Include any full-time teaching assignments, part-time teaching assignments, and long-term substitute assignments, but not student teaching. If less than 4 months total experience, enter 00.

Counting this year, how many years have you taught mathematics in grades 6 through 12? Include any full-time teaching assignments, part-time teaching assignments, and long-term substitute assignments, but not student teaching. If less than 4 months total experience, enter 00.
SCORES OF 8TH GRADE STUDENTS DISAGGREGATED BY TEACHING EXPERIENCE
YEARS OF TEACHING MATHEMATICS DISAGGREGATED BY RACE OF STUDENT (GRADE 8 - 2011)
YEARS OF TEACHING MATHEMATICS DISAGGREGATED BY SES OF STUDENT (GRADE 8 - 2011)

- **0-4 years**: 25 (Eligible) & 18 (Not eligible)
- **5-9 years**: 29 (Eligible) & 27 (Not eligible)
- **10-19 years**: 31 (Eligible) & 35 (Not eligible)
- **20+ years**: 15 (Eligible) & 20 (Not eligible)
YEARS OF TEACHING MATHEMATICS DISAGGREGATED BY ELL STATUS OF STUDENT (GRADE 8 - 2011)

0-4 years: 26 ELL, 21 Not ELL
5-9 years: 29 ELL, 28 Not ELL
10-19 years: 32 ELL, 33 Not ELL
20+ years: 12 ELL, 18 Not ELL
4th grade teachers were asked:

Counting this year, how many years have you worked as an elementary or secondary teacher? Include any full-time teaching assignments, part-time teaching assignments, and long-term substitute assignments, but not student teaching. If less than 4 months total experience, enter 00.
SCORES OF 4TH GRADE STUDENTS DISAGGREGATED BY YEARS TAUGHT ELEMENTARY OR SECONDARY
YEARS OF TEACHING ELEMENTARY OR SECONDARY SCHOOL DISAGGREGATED BY RACE OF STUDENT (GRADE 4 - 2011)
YEARS OF TEACHING ELEMENTARY OR SECONDARY DISAGGREGATED BY SES OF STUDENT (GRADE 4 - 2011)

- 0-4 years: Eligible 18, Not eligible 14
- 5-9 years: Eligible 25, Not eligible 24
- 10-19 years: Eligible 35, Not eligible 36
- 20+ years: Eligible 23, Not eligible 25
YEARS OF TEACHING ELEMENTARY OR SECONDARY
DISAGGREGATED BY ELL STATUS OF STUDENT (GRADE 4 - 2011)
WHAT DOES THIS MEAN?

- Students in 4th and 8th grade do not have equal access to an experienced teacher.
- Students of some races (Blacks, Hispanics), students eligible for free or reduced lunches and ELL students are more likely to have a teacher with relatively few years of teaching experience.