

## Teacher Quality, Initial Preparation, and Meeting the NCLB Highly Qualified Mandate

Mary T. Brownell, Ph.D.  
Paul T. Sindelar, Ph.D.  
University of Florida  
Directors, Center on Personnel Studies in Special Education

## Center on Personnel Studies in Special Education

» Collaborative venture of Johns Hopkins University and the University of Florida

- Funded by the U. S. Dept. of Education, Office of Special Education Programs
- To conduct research on the supply and demand, preparation, and certification and licensure of special education teachers and related service providers.

## COPSSE

- Reports on 10 teacher education topics and 9 related service disciplines
- Developed and validated teacher education and related services research agendas
- Undertaken studies on beginning teacher quality and the effectiveness of training alternatives
- All available on [www.copsse.org](http://www.copsse.org)

## COPSSE [www.copsse.org](http://www.copsse.org)

- Also available on our website:
  - Executive summaries as well as full-length versions of 19 research papers
  - Policy Briefs
  - Research Agendas
    - Teacher Education
    - Related Services
  - Descriptions of Current Studies

## Teacher Ed. Research Agenda

1. What is skilled practice?
2. Skilled novices vs skilled experienced teachers?
3. Characteristics of effective preparation?
4. Impact of workplace on teacher development?
5. Implications of NCLB for SE teachers?
6. Implications of NCLB for SE policy and practice?
7. What preparation options are available currently?
8. Completion and retention rates by program type?
9. Impact of state and federal policy on AR outcomes?
10. Program costs?
11. Impact of AR on shortages of SE teachers? On diversification of the workforce?

## Teacher Education Research Agenda

- Beginning Teacher Quality Study:
  - What do beginning teachers know and do? How do they learn? How does what they know and do relate to their initial preparation?
- Alternative Route Policy Studies
  - What special education AR programs are currently offered? What are they like?
  - How do AR program graduates differ from graduates of traditional teacher preparation programs?
  - What does teacher preparation cost? What does it return? How do traditional and AR programs compare?

## Current Studies

- Beginning Teacher Quality Study, Mary Brownell, PI
  - UF; University of Colorado, Boulder; and the Instructional Research Group, Long Beach, CA
- Cost Effectiveness of Preparation Options, Paul Sindelar, PI
  - UF, JHU, Bureau of Economic and Business Research
- Alternative Route Indexing Study, Mike Rosenberg, JHU, PI
  - JHU, Council for Exceptional Children
- SASS Path Analysis, Mike Rosenberg, JHU, PI
  - JHU, University of New Hampshire

## Highly Qualified and the Current Policy Context

Definition of Highly Qualified (S. 1248, now H.R. 1350):

*Highly qualified elementary special education teacher is one who has demonstrated subject knowledge and teaching skills in reading, mathematics, writing, and other areas of basic elementary school curriculum*

## Highly Qualified and the Current Policy Context

Definition of Highly Qualified:

*Highly qualified new middle or high school special education teacher is one who has demonstrated a high level of competency in each of the academic subjects taught*

## Highly Qualified and the Current Policy Context

Secondary definition of Highly Qualified does not apply to middle and high school special education teachers who:

- Provide only consultative services to general education teachers
- Provide instruction in core academic subjects to students with significant cognitive disabilities

## Becoming Highly Qualified in the Current Policy Context

*“the teacher has obtained full State certification as a special education teacher through a State-approved special education teacher preparation program (including certification obtained through alternative routes to certification) or other comparably rigorous methods, or passed the State teacher special education licensing examination, and holds a license to teach in the State as a special education teacher”*

## Impact of Highly Qualified

Increases Tension between Quantity and Quality in Special Education

- Special education shortages have persisted
  - since the EHA, about 10% a year
- Shortages are worse in urban and high poverty schools
- Shortages are likely to worsen as a result of

## Highly Qualified and Special Education Shortages

Percent of middle and high school special educators not highly qualified in core subject areas:

- English (91.9%)
- Mathematics (99.3%)
- Science (97.7%)
- Social studies (82.1%)

*(Schools and Staffing Survey, 1999-2000)*

## Two Different Policy Solutions

Struggles to reduce shortages while increasing quality have resulted in two distinct policy approaches:

- Professionalization Approach
- Deregulation Approach

## Professionalization Approach

Path to securing sufficient numbers of quality

teachers for all students focuses on:

- *Raising standards for teaching*
- *Raising standards for teacher education*
- *Greater investment in teaching and public schooling*

## Professionalization Approach

Some strategies for achieving reform:

- End inadequate alternative routes
- Raise admission and exit standards for teacher education programs
- Increase length of teacher preparation
- Implement professional development schools
- Provide strong induction and mentoring
- Reward excellent teaching
- Support teachers through professional development

## Deregulation Approach

Path to securing sufficient numbers of high quality teachers focuses on:

- Encouraging academically able persons to enter teaching; that is, those with subject matter preparation. . .
- By easing access to the teaching profession

## Deregulation Approach

- Develop and apply standards for the demonstration of content expertise
- Streamline certification and preparation requirements
- Increase preparation alternatives
  - Including passing rigorous certification and content area exams

## Pros and Cons of these Approaches

Professionalization approach:

- Research more supportive of this approach
- Reform strategies stress already tight state budgets (so does continually replacing teachers)
- Higher proposed standards serve to decrease diversity in the workforce

## Pros and Cons of these Approaches

Deregulation approach:

- Increases pool of available teachers, particularly diverse teachers
- Wrongly assumes that subject matter knowledge matter alone is sufficient
- Advocacy of alternative routes without understanding conditions that make them successful

## A Quote to Consider

*It has been asserted by the Abell Foundation and others that teacher certification [and preparation] does not matter in determining a teacher's effectiveness, but it is unlikely that these critics of the idea of teacher certification send their own children to these high-poverty or high-minority public schools filled with unlicensed teachers.*

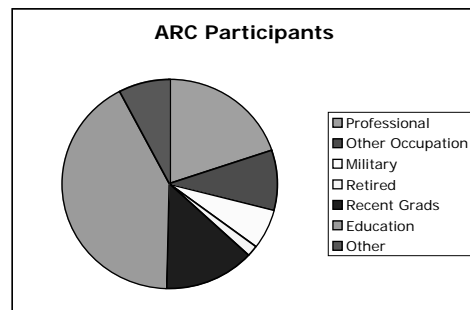
## ARC Participants

- Deregulation logic posits that eliminating barriers to entry will attract into teaching mid-career shifting professionals and recent college graduates who did not major in teacher preparation.
- What does the evidence show?
  - Feistritzer
  - Shen
  - CEC Indexing Study Data

## Feistritzer, 2004 Alt. Teacher Certification

- Reports
  - # of certificates issued to AR completers
  - Primary activity before entering AR program
    - Professional
    - Other Occupation
    - Military and retired military
    - Other retired
    - IHE in-state and out-of-state
    - Education related (emergency cert., other teaching, non-teaching)
- Used to compute % all AR completers by pre-teaching occupation or activity

## Feistritzer, 2004 Alt. Teacher Certification



## Mid-Career Changers

- This table presents just a taste of what some career changers encounter in terms of pay-cuts:

| Income Sacrificed by Mid-Career Changers |                      |              |                      |              |
|--|----------------------|--------------|----------------------|--------------|
|  | Accountants/Auditors |              | Mechanical Engineers |              |
|  | Dade                 | Hillsborough | Dade                 | Hillsborough |
| Cut in lifetime earnings                 | \$447,102            | \$362,296    | \$486,179            | \$584,531    |
| Cut in annual pay                        | \$43,285             | \$34,978     | \$47,068             | \$56,590     |
| Cut in hourly pay                        | \$16.24              | \$12.65      | \$18.13              | \$23.45      |

## Who's Gonna Do That?

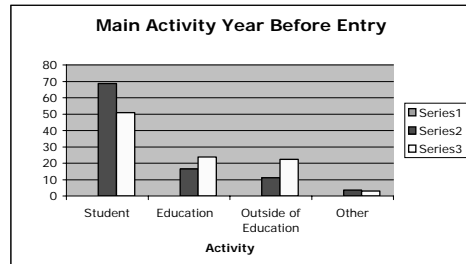
- Truly Altruistic
- Independently Wealthy
- Retired and Unfulfilled
- Incompetent
- Unemployed
- Unemployable. . . .

Motive for change does become an important consideration in choosing mid-career changers for teacher education programs

## Shen's SASS Analysis

- Schools and Staffing Survey
  - 1993-94 administration
  - Subset of teachers certified within the previous 10 years (N = 14,721)
  - Asked to describe "Main Activity the Year Before Entering Teaching"
    - Student
    - Education related profession
    - Outside Education
    - Other

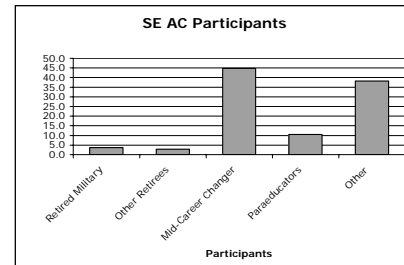
## Shen's SASS Analysis



## COPSSE/CEC Indexing Study

- Identified "all" AR programs in special education by contacting SEAs and asking
  - N = 206 and counting, representing 24 states and jurisdictions, including 1 in IL
- Telephone survey of program administrators
  - 95 respondents
- Asked, "What percent of students are. . . .?"
  - Retired military?
  - Recent college graduates?
  - General educators?
  - Retirees?
  - Mid-career Changers?
  - Paraeducators?

## COPSSE/CEC Indexing Study



## Teacher Quality

- Research examining the facets of teacher quality demonstrate that NCLB and IDEA views of teacher quality are simplistic.
- Subject matter knowledge is important, but what quality teachers know and do is far more complex.

## Facets of Teacher Quality

### Qualities of Effective Teachers:

- Teacher characteristics
- Teacher knowledge
- Classroom practices
- Student variables

## Teacher Characteristics

Students are likely to achieve stronger achievement gains when their teachers are:

- Experienced
- Academically able (relationship with achievement strongest in high poverty schools)
- Prepared in the subject area taught, particularly mathematics
- Certified for the subject they teach

## Classroom Practice

Teacher behaviors are the most robust predictors

of student achievement.

- Process-product research identified generic teaching behaviors that result in student achievement gains. Examples:
  - Explicit, active teaching
  - High levels of student engagement in curricular materials
  - Instructional tasks appropriate for the students

## Classroom Practice

- Recent research demonstrates the importance of generic and content specific pedagogy.
- For example, expert reading teachers provide:
  - Explicit, systematic skill instruction
  - A language rich environment
  - Continuous engagement in literacy activities

## Teacher Knowledge

Two perspectives on teacher knowledge:

- Subject matter knowledge is the most important factor in teacher quality.
- TK is a complex interweave of knowledge about subject matter, student characteristics, pedagogy, curriculum, and school context

## Teacher Knowledge

Research better supports the second view of teacher knowledge:

- Education coursework has a value-added effect beyond subject matter preparation on student achievement (Monk, 1994)
- Knowledge of reading content was only moderately correlated with classroom practice (Foorman & Schatschneider, 2003)

## Teacher Knowledge

- One study of special education teachers used stimulated recall to show that expert teachers have a knowledge of student learning that they employ while teaching (Stough & Palmer, 2003)

## Teacher Quality in Special Ed

- One large-scale study exists attempting to define teacher quality and relate it to student achievement ([www.seels.net](http://www.seels.net)).
- Teaching experience combined with certification status, self-reported practice in reading and behavior, self-efficacy, and professional development better predicted student achievement gains

## Our Beginning Teacher Quality Study

Why study beginning teacher quality?

- Policymakers are defining teacher quality with little research to inform their definitions
- Professional standards have also been developed without sufficient research to inform definitions
- What teachers know and do to promote student achievement is the ultimate criteria for judging the effectiveness of teacher education

## Beginning Teacher Quality

Overall purpose of our study is to identify:

- What beginning teachers know and do to promote student achievement
- Ways in which initial preparation promote beginning teacher quality

## Methodology

Teacher Pool:

- Thirty eight special education teachers with 1-3 years experience in Florida, California, and Colorado
- Florida teachers provided reading instruction in a pull-out model
- Preparation backgrounds varied considerably
- Class size varied from 3 to 18 students
- Most taught in high poverty urban and rural schools
- Many of the teachers used highly structured curriculum

## Methodology

### Research procedures:

- 3 observations per teacher using an instrument adapted from research on ELL students
- Achievement data collected on students in 3rd, 4th, and 5th grade
- Content knowledge survey in reading administered to all teachers
- Initial preparation and workplace survey administered to all teachers
- Interviews with subsets of teachers

## Instrumentation

- Observation instrument includes generic pedagogical practices, reading specific pedagogical practices, and classroom practices.
- Content knowledge survey focuses on knowledge of word recognition and comprehension instruction

## Instrumentation

- Teacher surveys include information about quality of initial preparation and school context
- Student achievement data collected on word identification, word attack, oral reading fluency, and comprehension using the Woodcock Johnson Reading Mastery, passages from basal texts, and the Gray Oral Reading Test

## Preliminary Analysis of Data

### Preliminary Analysis of Florida data:

- High levels of interrater reliability on the observation instrument (80%)
- Items on the observation instrument effectively distinguish high quality from low quality teachers

## Preliminary Analysis of Data

- Strong correlations between overall teacher quality scores and growth on word identification (.51) and oral reading fluency (.42).
- Reading comprehension scores contributed about 4% of the variance in teacher quality scores

## Preliminary Analysis of Data

- Most teachers perform well on the Content Knowledge Survey
- The two weakest teachers demonstrate very little content knowledge (56 and 38 out of 119)
- Scores suggest that some teachers have more difficulty operationalizing their knowledge of reading in the classroom than others

## Preliminary Analysis of Interviews

- Most beginning special education teachers:
  - Demonstrate uneven knowledge of reading instruction
  - Use the strategies that they were taught in class and had the opportunity to practice
  - Indicate they were well-prepared in many aspects of special education, but not sufficiently prepared to teach reading to students with disabilities
  - Are not completely aware of how their preparation plays a role in what they do

## Preliminary Analysis of Interviews

- Initial preparation is most helpful to teachers when it matches the:
  - Teacher's learning needs
  - Position in which the teacher finds a job
- When mismatches on either of these dimensions occur, practice enacted by teachers is less likely to reflect aspects of initial preparation programs.

## Initial Thoughts About Findings

- Securing decent student achievement gains requires a certain amount of pedagogical skill
- Tying student achievement to teacher quality requires appropriate student assessments
- Most novices, although knowledgeable about teaching reading, need a lot more assistance once they reach the classroom
- Generic preparation is unlikely to produce the types of teachers who can teach reading well
- Curriculum supports beginning teacher reading instruction

## Characteristics of Exemplary Preparation Programs

### Findings from General Education:

- Programmatic vision permeates the program
- Theory, pedagogy, and subject matter are well-integrated
- Coursework and field experiences are integrated
- Standards of practice are carefully articulated and monitored
- Active pedagogy is used to promote reflection
- Extensive field experiences are well supervised
- Professional collaboration is valued and emphasized

## Exemplary Program Outcomes

### Graduates of exemplary programs:

- Demonstrate a deeper knowledge of how to teach reading, writing, and mathematics
- Hold beliefs that will enable them to be more successful with diverse students and those who struggle
- Secure better student achievement gains on reading comprehension measures

## Special Education Preparation Compared

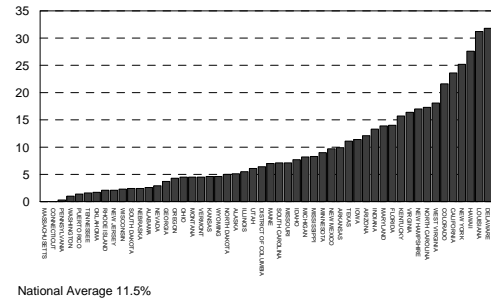
- Commonalities:
  - Carefully designed, well-supervised field experiences
  - High degree of professional collaboration
- Differences:
  - Student diversity addressed from different perspectives
  - Program evaluation employs more direct assessment in GE
  - Program orientation articulated better in GE
  - Stronger emphasis on content area pedagogy in GE

## COPSSE Policy Studies

Cost Effectiveness  
CEC Indexing  
SASS Analysis

## Uncertified Special Ed Teachers

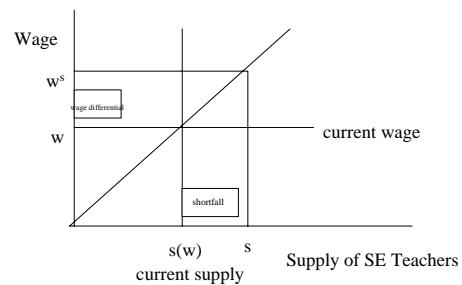
Share of All Special Ed Teachers, 2000



## Cost Effectiveness of Preparation Options

Paul Sindelar, UF  
Michael Rosenberg, JHU  
David Denslow, BEBR  
James Dewey, BEBR  
Chifeng Dai, BEBR

## The Simple Case



## Critical Assumptions

- Within school districts, wages paid special education teachers--or science or math teachers--are the same as those paid other teachers.
- Wages are constrained by negotiated agreements; otherwise, wages paid special education teachers--and science or math teachers-- would be higher than those paid other teachers.
- It is not feasible to remove this constraint. Voters will not approve large enough increase to pay all teachers the salary required to attract enough special education (and science and math) teachers (Hanushek, Kain, and Rivkin, 1999).

## Evidence for Assumptions

- The proportion of special education teachers who are less than fully certified is much higher than the proportion of general education teachers who are less than fully certified.
- Although special education teachers often become general education teachers, the reverse is less likely.
  - McLeskey, Tyler, & Flippin (2003) noted that special education suffers a net loss of 5,000 teachers to general education annually

## Implication of Assumptions

- To address shortages, we must increase the supply of special education teachers.
- Many approaches are being used to increase the supply, including alternatives to traditional teacher preparation.
- Analyzing costs and benefits of the various approaches could result in more efficient allocation of limited training funds.

## Can Traditional Training Boost Supply Enough?

- Traditional training has a relatively low average cost (Darling-Hammond, 2000)
- Most students in tradition programs would attend college anyway, so their participation in teacher preparation costs nothing
- To increase enrollments, programs would have to boost student support
- Because enrollment is "inelastic," these increases must be large, and the cost would be prohibitive
- Increasing enrollments in traditional programs may not be the answer to the problem of shortages

## No Child Left Behind

- NCLB provides funds for states to provide alternative routes for, among others:
  - Paraprofessionals (step-up)
  - Mid-career changers (e.g., accountants, engineers, former military personnel)
  - Early-career changers (e.g., Teach for America)

## Evaluating Programs-- Data Needs

- Consistent cost data
- Precise career path, by program type
- What can we learn without precise cost and attrition data?

## Cost Effectiveness

- Varies as a function of cost and attrition so that
  - High cost program may be cost effective when retention is high
  - Low retention program may be cost effective when cost is low
- More generally, benefit is sensitive to persistence at high costs and sensitive to cost at low persistence.
- Lacking good data on persistence by program type, what can we infer about persistence by program type from other sources?

## Step Up

- Step Up candidates bring more knowledge about both the job of education and the location.
- Economists say that they bring job- and location-specific "human capital" to their work, making them more likely to remain on the job.

## Mid-Career Changers

- Mid-career changers can be a riskier clientele, depending on
  - Their reasons for changing careers
  - The salary differential (Remember the Dade and Hillsborough County accountants and mechanical engineers)
  - The similarity between teaching and their previous careers

## Mid-Career Changer

- Some may view teaching as a temporary job
  - A former accountant at Arthur Anderson
  - A high tech industry worker
- Consider a hypothetical Arthur Anderson accountant:
  - Being a senior at the firm, she made around \$90,000 annually after 25 years at her firm
  - Upon switching to teaching, she earns about \$30,000 because she only has a bachelor's degree and no experience
  - She might be keen to return to accounting, whatever the joys of teaching
  - If her time at an ARC were subsidized, the state would lose much of its subsidy if she quit teaching

## Reducing the Risk

- Seek qualified people who won't readily return to previous employment
  - Retired military officers are a good example
- If program participants are taking large pay cuts or are moving from fields quite unlike education, assess their motivation for making the change
- Make subsidies contingent on teaching
  - Like OSEP's service obligation requirement

## Insights From Labor and Information Economics

- More school, occupation, and location specific human capital means higher persistence (Jovanovic, 1979)
- Better job match yields higher persistence (Jovanovic, 1979)
- Investing more time and effort signals more persistence (Salop & Salop, 1976, Becker, 1975)
- For many occupations, lifetime earnings profile punishes career shifting
- Career shifting may signal low quality, low persistence, or both (Chang & Wang, 1995)
- If the career changer is shifting for a "good" reason, it may signal they think they are a good match
- So age, reason for shift, and willingness to invest own resources may signal persistence and quality

## Example: Mid-career Changer vs. Step Up

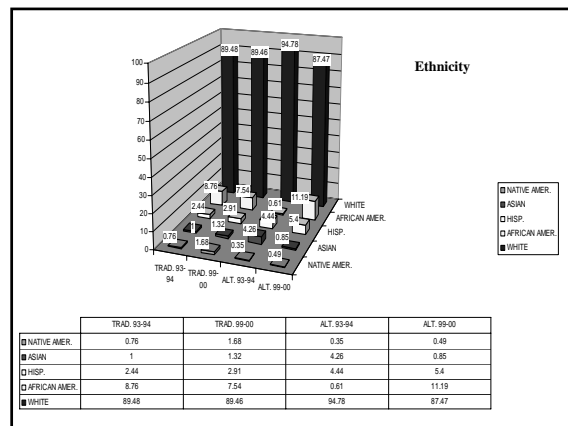
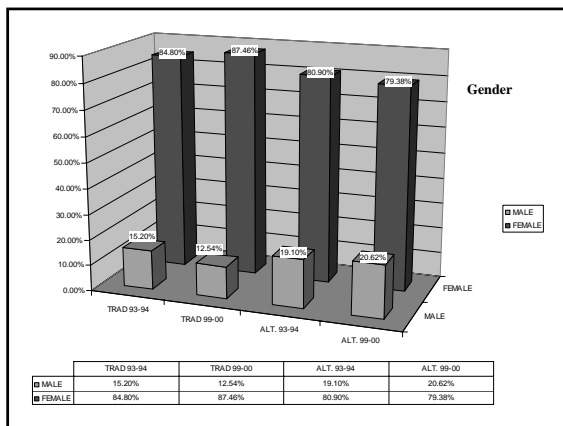
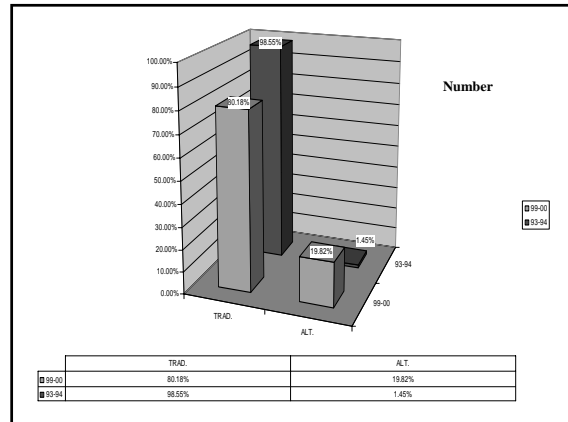
- Both are career changers
- Absent other information, mid career changers represent a riskier applicant pool
- Step up program participant does not take earnings hit from switch
- Step up brings more school, occupation, and location specific human capital
- Step up candidate invests more time and effort, signaling more persistence
- Job match characteristics are better known to workers and employers in step up programs
- If any program can justify a large program cost, it is step up programs for current district personnel in high needs districts

## Other things the same, spend more on training methods that

- Attract entrants who are more likely to remain in teaching
- Tap new pools of potential teachers and draw few entrants away from existing programs
- Prepare entrants in a way that makes them more likely to remain in teaching
- Cost less

## SASS Path Analysis

Mike Rosenberg, JHU, PI  
Vincent Connelly, University of New Hampshire



## Schools and Staffing Survey, Public School Teacher Questionnaire

- Administered most recently in 93-94 and 99-00
- Nationally representative sample of ~45,000
  - 4,919 special education teachers
  - 2,159 first time teachers
- Nature of initial preparation
- Sense of preparedness

## Nature of Initial Preparation

- 6 options
  - Bachelor's degree program
  - "5th Year" program
  - Master's degree program
  - After I began teaching, as part of an alternative program
  - Before I began teaching, as part of an alternative program
  - Continuing professional development

## Sense of Preparedness

- To teach assigned subject matter
- To select curricular materials
- Plan lessons effectively
- Use variety of instructional methods
- Assess students
- Handle classroom management
- Use computers in instruction

## SASS Findings

- COPSSE: When using groups of traditional and alternative from SASS categories: None on preparedness
- Boe, Cook, et al.: When differentiating on *length of practice teaching*
  - None (9.1% all, 10% SE)
  - 1 to 9 weeks (9.4% all, 16% SE)
  - 10 weeks or more (81.5% all, 74% SE)

## SASS Findings

- COPSSE: Traditionally trained reported feeling better prepared on 3 items and less well prepared on 3 items.
- Boe: On 6 items, teachers with 10 weeks or more of practice teaching reported feeling better prepared than teachers with 1 to 9 weeks, who reported feeling better prepared than teachers with no practice teaching.

## Implications

- Alternative/Traditional distinction not a particularly useful one
- There is great heterogeneity among alternative programs, great heterogeneity among traditional programs, and considerable overlap between the two
- Research needs to assess impact of program elements (e.g., length of practice teaching) and not make meaningless comparisons between *traditional* and *alternative*

## Designing Effective Induction

Why should we be concerned about induction?

- More likely to leave teaching
- Less likely to be fully-certified
- Struggle with demands of teaching
- Greater isolation from colleagues
- Insufficient curricular and technical resources
- Role issues
- Poor school climate
- Lack of professional growth opportunities

## Designing Effective Induction

Evidence suggests that quality induction:

- Reduces attrition rates, mostly for general education
- Decreases financial costs associated with attrition
- Improves teacher quality

### Components of Effective Induction Programs

- Clear goals and purpose for the program
- Mentoring
- Opportunities for interaction between new/experienced teachers
- Professional Development
- Formative and summative evaluation

### Components of Effective Induction Programs

- Culture of shared professional development
- De-emphasized evaluation
- Diversified content
  - Instructional content
  - Pedagogical content
  - Psychological support
- Fiscal and political support

### Considerations for Special Education

- Mentors specific to special educators
  - Matching grade level, content areas, teaching model, disability categories, teaching style, and gender
  - Considering close physical proximity
- Mentor Characteristics
  - Having knowledge of special education (regulations and pedagogy)
  - Combining personal and professional characteristics effectively
  - Playing non-evaluative roles

### Considerations for Special Education

- Content
  - Importance of personal and emotional support (Esp. for the first year)
  - System information (School, District, & Special education)
  - Task or problem-focused support
  - Critical reflection on teaching practice
  - Materials/resources