Research Review

Teaching Quality

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The Impact of Mentoring on Teacher Retention: What the Research Says

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Executive Summary

In recent years there has been a growth in support, guidance and orientation programs – collectively known as induction – for beginning elementary and secondary teachers during the transition into their first teaching jobs. While the particulars of such programs vary widely, they are generally intended to increase the confidence and effectiveness of new teachers, and thus to stem the high levels of attrition among beginning teachers, which estimates place as high as 40-50% within the first five years.

Over the past two decades, numerous studies have been done on a variety of different types of induction programs, and this research has been widely cited by both advocates and reformers. It is unclear, however, whether the soundness of much of this research truly justifies the conclusions often taken from it. To help address this issue, the Education Commission of the States commissioned the present effort as a comprehensive and critical review of existing empirical studies on induction programs.

This reports's primary objective is to provide policymakers, educators and researchers with a reliable assessment of what is known, and not known, about the effectiveness – the value added – of teacher induction programs. In particular, this review focuses on the impact of induction and mentoring programs on teacher retention.

While the literature search located some 150 empirical studies of induction and mentoring programs, in the end only 10 studies could be included for this ECS review because all studies had to satisfy three criteria:

1. Quantitative Data – The studies had to involve quantitative research because the task was to determine the value added of induction programs.
2. Evaluation and Outcomes – The studies had to evaluate the effects of induction in terms of well-defined, verifiable outcomes for the teachers who were mentored.
3. Comparisons – The studies had to compare those individuals who were mentored with those who were not in order to provide unambiguous conclusions about the value added (or not) of the induction programs.

While the impact of induction and mentoring differed significantly among the 10 studies reviewed, ***collectively the studies do provide empirical support for the claim that assistance for new teachers and, in particular, mentoring programs have a positive impact on teachers and their retention.***

The findings of the studies are seriously limited, however, by the fact that most of them were not able to control completely for other factors that also might have affected the outcomes noted. Also, the content, duration and delivery of the programs studied were so varied from one site to another that it is not clear to what extent general conclusions about mentoring and induction can be drawn from any given study.

Although the studies point to the likely value of some induction and mentoring programs in decreasing the attrition of new teachers, there remain a number of pressing questions concerning mentoring and induction that require more controlled and systematic research than currently exists in order to be answered with confidence:

1. What kinds of teachers are helped most by induction and mentoring programs?
2. Which elements, supports and kinds of assistance make induction and mentoring programs most helpful in addressing the various weaknesses among new teachers with differing backgrounds?
3. Which aspects of induction and mentoring programs contribute most to the increased retention of new teachers? Do these differ from the factors that contribute most to teachers' enhanced classroom effectiveness?
4. Do the selection, preparation, training, assignment and compensation of mentors make a difference?
5. Is it possible to document links between teacher participation in mentoring and gains in student outcomes?

Developing carefully controlled studies to answer these key questions will be crucial to allow policymakers and educators to make informed decisions regarding the implementation of mentoring and induction policies and programs for their schools.

Introduction

Historically, the teaching occupation has not had the kind of structured induction and initiation processes common to many white-collar occupations and characteristic of the traditional professions (Waller 1932; Lortie 1975; Tyack 1974). In recent years, however, there has been a growth in support, guidance and orientation programs – collectively known as induction – for beginning elementary and secondary teachers during the transition into their first teaching jobs.

Although elementary and secondary teaching involves intensive interaction with youngsters, the work of teachers is largely done in isolation from colleagues. This can be especially difficult for new entrants who, upon accepting a teaching position in a school, are often left on their own to succeed or fail within the confines of their own classrooms – an experience likened to being "lost at sea." (Sizer 1992; Johnson 1990; Johnson and Birkeland 2003). Indeed, critics have long assailed teaching as an occupation that "cannibalizes its young" and in which the initiation of new teachers is akin to a "sink-or-swim," "trial-by-fire" or "boot-camp" experience.

Perhaps not surprisingly, teaching also traditionally has been characterized as an occupation with high levels of attrition, especially among beginners (Lortie 1975). All occupations, of course, experience some loss of new entrants – either voluntarily because newcomers decide to not remain or involuntarily because employers deem them to be unsuitable. But teaching has long had alarmingly high rates of attrition among newcomers. A number of studies have found between 40-50% of new teachers leave within the first five years of entry into the occupation (e.g., Murnane et al. 1991; Ingersoll and Smith 2003; Huling-Austin 1990; Hafner and Owings 1991; Grissmer and Kirby 1987, 1992, 1997; Veenman 1985). Moreover, several studies have found a significant correlation between a teacher's likelihood of retention and their scores on exams such as the SAT. The "best and the brightest" appear to be those most likely to leave (Murnane et al. 1991; Schlecty and Vance 1981; Henke et al. 2000).

Recent research also has documented what many educators have long suspected – a strong link between the perennially high rates of beginning teacher attrition and the teacher shortages that seem to perennially plague schools. An analysis of national data has shown that widely publicized school staffing problems are not solely – or even primarily – the result of too few teachers being recruited and trained. Instead, the data indicate that school staffing problems are to a significant extent a result of a revolving door, where large numbers of teachers depart teaching long before retirement (Ingersoll 2001)

These are the kinds of occupational ills that effective organizational induction programs are supposed to address and, accordingly, in recent decades a growing number of states and school districts have developed and implemented a variety of such programs. Teacher induction, it is important to clarify, is distinct from both preservice and inservice teacher training programs. Preservice refers to the training and preparation candidates receive prior to employment (including clinical training such as student teaching). Inservice refers to periodic upgrading and additional training received on the job, during employment. Theoretically, induction programs are not additional training per se, but are designed for those who have already completed basic training. These programs are often conceived as a "bridge" from student of teaching to teacher of students. Of course, these analytic distinctions can easily become blurred in real situations.

Like the induction processes common to other occupations, there are a number of different, and sometimes conflicting, purposes behind teacher induction programs. Among them are support, socialization, adjustment,

development and assessment. Moreover, teacher induction can refer to a variety of different types of activities – classes, workshops, orientations, seminars, and especially, mentoring. The latter refers to the personal guidance provided, usually by seasoned veterans, to beginning teachers in schools. Over the past two decades, teacher mentoring programs have become the dominant form of teacher induction (Fideler and Haselkorn 1999); indeed, the two terms are currently often used interchangeably.

The overall objective of teacher mentoring programs is to provide newcomers with a local guide, but the particulars in regard to character and content of these programs themselves widely vary. Duration and intensity are one set of variables; mentoring programs can vary from a single meeting between mentor and mentee at the beginning of a school year, to a highly structured program involving frequent meetings over a couple of years between mentors and mentees who are provided with release time from their normal teaching schedules.

Programs also vary according to the numbers of new teachers they serve. Some include anyone new to a particular school, even those with previous teaching experience, while others focus solely upon inexperienced candidates new to teaching. In addition, programs vary according to their purpose. Some for instance are primarily developmental and designed to foster growth on the part of newcomers; others are also designed to assess, and perhaps weed out, those deemed ill-suited to the job.

Finally, mentoring programs also can vary as to how they select, prepare, assign and compensate the mentors themselves. How carefully mentors are selected is an issue for programs, as is whether selection to be a mentor is truly voluntary or a semi-mandatory assignment. Some programs include training for mentors; some programs do not. Programs differ according to if and how they pay mentors for their services. Some programs devote attention to the match between mentor and mentee. For instance, some programs strive to see that new secondary math teachers are provided with mentors who have had actual experience teaching secondary-level math; others do not.

What kinds of induction and mentoring programs exist, and under what circumstances they help are clearly fundamental questions for the field and for policymakers faced with decisions about supporting such programs. Accordingly, with the growth of induction and mentoring programs, there also has been a growing interest in empirical research on the variety and effects of these initiatives. Over the past two decades, numerous studies have been done on a variety of different types of programs. In turn, education advocates and reformers frequently cite examples drawn from this research to secure additional funding, to garner political support or to confirm a particular educational perspective.

It is unclear, however, how much of this research warrants unambiguous conclusions about the particular value added by the induction and mentoring program being considered. Some studies appear to lack methodological rigor and draw conclusions that reach beyond what their data truly support. And there has been little research investigating possible negative effects of mentoring. For instance, if mentors simply pass on their own teaching practices, regardless of whether they are effective or not, programs might tend to stifle innovation or the implementation of new approaches on the part of beginning teachers. Moreover, the content, duration and delivery of programs are so varied from one site to another that it is not clear to what extent general conclusions about mentoring and induction can be drawn from the extant research.

Currently, there is need for assessment of the existing empirical research on teacher induction and mentoring in order to determine its scope and merit, and the conclusions that may be drawn from it. To be sure, a number of useful reviews of theory, research and policy on teacher induction and mentoring have been published (e.g., Arends and Rigazio-DiGilio 2000; Holloway 2001; Feiman-Nemser et al., 1999; Feiman-Nemser 2001; Ganser 2002; Hegsted 1999; Fideler and Haselkorn 1999; Scherer 1999; Serpell and Bozeman, 1999; Gold 1999; Wang and Odell 2002). But, to date, there has been no comprehensive and critical review of existing empirical studies on induction and mentoring programs.

The Project

The primary objective of this project is to provide policymakers, educators and researchers with a reliable assessment of what is known, and not known, about the effectiveness – the value added – of teacher induction programs. A secondary objective here is to identify important research questions concerning teacher mentoring that have not yet been addressed and the kinds of research that would be required to yield significant implications for policy.

This review focuses, in particular, on studies that seek to evaluate the effects of beginning teacher mentoring programs; that is, empirical studies that address the question: does mentoring matter? The interest of citizens and

policymakers is in whether such programs matter, ultimately, for the growth and learning of students. Typically, however, researchers focus on the effect of mentoring on teachers. In existing empirical studies, teacher outcomes usually fall into two categories: teacher attitudes (e.g., teacher's job satisfaction, efficacy and commitment); and teacher retention or turnover.

Methods

Because the objective here was to provide a thorough and comprehensive review, an attempt was made to locate as wide a range of studies of teacher mentoring as possible. To accomplish this, a number of leading researchers in the field were contacted, as well as analysts in state governmental agencies. Existing systematic, narrative or traditional reviews of research were examined and extensive online searches of numerous databases were conducted, including Dissertation Abstracts, Educational Resources Information Clearinghouse (ERIC), Psychological Abstracts and Sociological Abstracts.

Combinations of the following key words were used in online searches: Beginning Teacher Induction; Mentoring Programs; Teacher Mentors; Statistical Data; Educational Policy; Beginning Teachers; Faculty Development: Program Evaluation; and Teacher Improvement. Searches included both published and unpublished documents on teacher mentoring and studies both from the United States and other countries. Interest in teacher induction and mentoring appeared to gain momentum in the mid 1980s; hence, this review focuses on studies from that period to the present.

The search initially located over 500 documents concerned with teacher induction and mentoring. These included essays, reviews, reports, studies and articles. In a second sequence of steps, all documents were excluded that were not empirical studies reporting data on beginning teacher mentoring programs. First, abstracts were reviewed with this criterion in mind – a step that trimmed the list to about 150 documents (see References section). Second, a closer look was taken at the articles, reports and papers themselves – which resulted in a further reduction to 57 documents. Finally, a third step excluded any of the studies that failed to meet each of three specific criteria. This third step yielded a total of 10 studies. The results and limitations of these 10 studies are described further below in the Results section. The three criteria used to cull the list of studies down to 10 are as follows:

1. Numeric/quantitative data
The focus here is on studies that attempt to quantify the effects of mentoring. Hence, in general qualitative or ethnographic studies were excluded. Studies in which quantitative data on mentoring programs and outcomes were collected via qualitative methods – such as field research, interviews or focus groups – were, however, considered for inclusion. Also considered for possible inclusion were qualitative studies embedded in a controlled research design, however, no examples of this type of research were found.

2. Evaluation and Outcomes
This analysis only included empirical studies that sought to evaluate the effects of mentoring using one or more outcomes. Therefore studies that were descriptive, rather than evaluative were excluded; i.e., studies that solely sought to summarize or describe the extent, content or character of mentoring programs (e.g., Fideler and Haselkorn 1999; Ganser 1991, 1994, 1996, 1997; Schaffer et al.1992; Wollman-Bonilla 1997). Also excluded were studies with outcomes that were not designed to evaluate the effects of mentoring programs on mentees (e.g., Olsen and Heyse 1990). This excluded studies that solely evaluated the effects of mentoring programs on mentors themselves (e.g., Veenman et al. 1998; Ganser 2000). Finally, studies were excluded whose outcomes were not sufficiently well-defined, measured or presented to be able to assess the accuracy of the results (e.g., Freiberg et al. 1994; Bradley and Gordon 1994; Odell and Ferraro 1992; Perez et al. 1997).

3. Comparisons
Studies were only included here if they provided for comparison of those mentored with those who did not receive mentoring. The majority of empirical studies examined were reports of program evaluations that collected data on outcomes solely from those who had participated in the mentoring programs being evaluated (e.g., Wilson, Darling-Hammond and Berry 2001; Adkins and Oakes 1995; Yosha 1991; Marso and Pigge 1990; Mitchell and Scott 1998, 1999; Wilkerson 1997; Gregson and Piper 1993; Strong and St. John 2001; Villeme et al. 1992; Stroot et al. 1999; Scott 1999; Tushnet et al. 2000; Shields et al. 2001). Such studies can provide valuable feedback to both providers and participants of such programs. But unless a study collects similar outcome data from both participants *and* nonparticipants in a program, it cannot provide unambiguous conclusions about the value added (or not) of that program. In other words, to establish whether participants perform differently than nonparticipants, one must empirically compare both groups. Studies varied in their use of terms like "control," "comparison," "treatment" and "experimental" to refer to the groups they examined. Rarely, however, were control groups used

in the strict technical sense where participants are randomly assigned to treatment and nontreatment groups.

This third criterion had implications for research from states like California where statewide teacher mentoring programs cover almost all new teachers and, hence, preclude such comparisons. As a result, the authors of this ECS review did not use some otherwise highly informative evaluative work on the California teacher mentoring program (e.g., Fletcher, Strong and Villar 2004; Strong 1998; Strong and St. John 2001).

Results

The 10 studies reviewed include:

1. California Mentor Teacher Induction Project
In the late 1980s Brown and Wambach (1987) conducted an evaluation of the California Mentor Teacher Induction Project (MTIP) – a state program whose primary objective was to increase the retention of new teachers. The MTIP program consisted of two phases. In Phase 1 preservice student teachers were matched with master teachers for a seven-week program, and in Phase 2 first-year teachers were matched with master teachers for yearlong mentorships. Preparation of the mentors involved prior participation in preservice seminars with the student teachers. Efforts were made to match mentor and mentee according to grade level and curricular emphasis. The Phase 2 program involved regular ongoing contact and classroom visitations between mentors and mentees.

The review for ECS focused on the results obtained from Phase 2 of the study. In this phase, the experimental group (the mentees) and a control group (a "group of first-year teachers not in the project") were administered a questionnaire at the end of the first year that asked, "Will you continue teaching?" The question had four possible responses: (1) no, (2) unsure, (3) yes, probably and (4) yes, definitely. The analysis of these responses showed a slight positive effect for mentoring and the experimental group was more likely to report that they were going to continue teaching. The mean score for the experimental group was 3.0 and for the control group, 2.3 – a difference that was marginally statistically significant ($p = .069$). Notably, on a second question (a self-evaluation on the part of the teacher whether their first year was a success) the analysis found group differences to not be statistically significant.

This study did provide some useful data on the effects of the state mentor program. There were, however, several serious limitations. First, sample selection was unclear. The study did not include the total number included in either group, how the control group was selected, the total number of questionnaires returned or whether the questionnaire was required as part of the program (although the report seemed to imply it was voluntary).

Second, the study looked at first-year teachers' *intentions* to continue teaching -- no data on actual retention or turnover were collected. Teachers' reports of their future plans can provide useful information, but it is unclear how closely self-reported intentions mirror actual behavior. Third, no data were presented on the distribution of responses for the key question on retention – clouding any information that could be drawn from the results. For example, if the experimental group answered primarily (1) and (4) and the control group answered primarily (2) and (3), it might indicate the program was more effective in solidifying participant's decisions on whether to continue teaching, but not, necessarily, on what these decisions may or may not be.

2. *New York City Retired-Teachers-as-Mentors Program*
Gold and Pepin (1987) conducted a study in the late 1980s of a New York City program that used retired teachers as mentors for a sample of the city's beginning teachers. While the study's primary focus was the selection of the mentors (both the process and the rationale behind the use of retired teachers), the retention of those teachers involved in the program also was addressed.

The mentor program was one year in length and involved a total of 66 hours of contact time between mentor and mentee. Mentors received program training through a four-day summer workshop and in three additional seminars during the year. At the end of the program a questionnaire was sent out to 160 mentees and also a comparison group of 113 non-mentored teachers. It appears that Gold and Pepin defined retention as those who remained in the district. Hence, both those who left teaching altogether and those who moved to private schools and other districts were defined as turnover. Along with retention, Gold and Pepin looked at the amount of assistance with daily tasks (e.g., planning lessons, preparing assignments, discipline, etc.) that the teachers received. Mentees received the bulk of their assistance from their individual mentors, while the non-mentored had to rely on "normal school support services."

Gold and Pepin found some positive effects of the program. First, mentees had slightly higher retention than did

the non-mentored, although no statistical analysis was provided. They also noted that the same year the study was conducted a new school district pay scale was introduced, which increased salaries "significantly." This may have had a leveling effect on retention rates, and could have affected differences between the two groups (mentored and non-mentored). As for the assistance with various daily activities, the results showed that mentees received more direction from their mentors than the non-mentored received through normal interaction with peers.

It is difficult to come to solid conclusions about these data because questionnaire nonresponse may have been a serious shortcoming. The number of respondents to any given question ranged from 22 to 110 (of the 160 mentored) and from 9 to 57 (of the 113 non-mentored).

3. Toronto Teacher Peer Support Program

In the early 1990s Cheng and Brown (1992) conducted an evaluation of the Toronto Teacher Peer Support Program – a pilot mentoring program undertaken by the Toronto school district for two years. The program placed mentors with mentees from similar grade levels or programs and from the same school for a year. Most of the participants met at least weekly during the first semester of the school year. By the last three months of the school year, however, only about half of the participants continued meeting on a weekly basis. Mentor training included an orientation early in the school year, followed by a series of workshops throughout the year. Participants were given five full days of release time to be used when and as they chose, for "dialogue and sharing." This resource, however, was not always used; only about two of the five full release days were used per participant in each year of the study.

The study incorporated both an experimental group (those teachers with mentors) and a control group (the non-mentored). In the program's first year, the control group was selected from those new teachers who did not qualify to be in the program. In the second year, since almost all of the first-year teachers qualified for the program, a random sample of teachers new to the district who did not receive mentors was used as a control group. Some of these appeared to have had some prior teaching experience. In the study's first year, there were 17 teachers in the experimental group and 17 in the control group. In the second year, there were 29 teachers in the experimental group and 43 in the comparison group.

Data were collected by questionnaires sent to all of the mentored and non-mentored teachers, as well as to the principals and the mentors. The questionnaires for the new teachers included items on: how the new teachers rated their overall experience, whether the decision to become a teacher was the right decision, whether they would choose teaching as a career again, their plans to stay in teaching and areas of difficulty they had in their first year of teaching.

Cheng and Brown found positive effects of the program. For the year one cohort, mentees more often rated their overall experience as positive than did the non-mentored (88% to 53%). The non-mentored group was also more likely to rate their experience as negative than was the experimental group (24% to 6%). For the year two cohort, however, the gap between the groups narrowed. Of the mentored teachers, 86% rated the experience positively as compared to 76% of the non-mentored. The second-year cohort also saw a drop in the gap for teacher's ratings of their first year as negative (6% of non-mentored to 3% of mentored).

Similar results were found for the question concerning whether respondents felt that it was the right decision for them to become a teacher. In the first cohort, 100% of the mentored and 73% of the non-mentored felt it was the right decision (of the non-mentored, 7% felt it was the wrong decision and 20% were unsure). Again in the second cohort, the two groups' responses somewhat converged; 90% of mentored teachers and 88% of non-mentored thought it was the right decision, while 10% and 12%, respectively, were unsure (there were none in either group that felt it was the wrong decision). The results for the question concerning whether respondents would again choose teaching as a career were virtually identical to those concerning whether it was the right decision to go into teaching.

When asked if they planned to stay in teaching, 76% of those mentored in the first cohort and 60% of the non-mentored answered yes, while 8% and 13% indicated they would not stay, and 18% and 27% reported they were unsure. In the second cohort 97% and 91% said yes, and 3% and 9% were unsure (none said no).

These results are informative, but there were no tests of statistical significance. Moreover, a serious limitation of this study was a lack of discussion of the criteria and process of choosing participants for the program, leaving open the question of selection bias. Differences in the characteristics of participants and nonparticipants, rather than the program itself, might account for differences in outcomes. A lack of information on, or controls for, these characteristics limits the ability of the authors of this ECS review to judge the reliability of the conclusions.

4. Mentoring Program in an Unspecified District
Odell and Ferraro (1992) produced a relatively brief report based on the retention rates of two cohorts of beginning teachers in an unspecified district and state (although it is never explicitly stated, it is assumed the state in question is New Mexico since the comparison group is statewide data provided by the New Mexico State DOE) The yearlong program was administered to all of the beginning elementary teachers "from the 76 elementary schools in the school district for two successive years....." This amounted to 81 teachers in the program's first year cohort and 79 teachers in the second year cohort. Support was provided "both inside and outside of the classroom" by a total of nine mentors (who presumably traveled from school to school to provide assistance). Mentors were experienced teachers "selected by the collaborating university and school district on the basis of their classroom teaching excellence, effectiveness in working with adults, and demonstrated commitment to being an active and open learner."

Retention of mentored teachers was the primary focus and outcome of the study To that end, all participants were sent a questionnaire four years after their mentoring experience. Odell and Ferraro state that "concerted efforts were made to locate and contact the teachers." All of the teachers who were located were asked to complete and return a 12-item questionnaire. Teachers were defined as "retained" if they were still teaching in a classroom after the four years had elapsed The article provides no indication of whether those retained were in the same school or district or state. It appears that some of those retained may have switched schools within the district. It is unclear if those who moved to teaching jobs in other districts or other states were counted as retention or turnover.

Odell and Ferraro were able to locate a rather high percentage of the teachers who participated in the program. Of the 81 participants in the year one cohort, 70 were located, and of the 79 in the year two cohort, 71 were located. This resulted in an overall location success rate of 88%. After four years, 96% of the total teachers located (from both groups) had been "retained."

They then compared the retention rate from the mentored teachers to five-year statewide data on retention of all beginning teachers and found a large difference The statewide turnover rate for beginning teachers was in "excess of" 9% per year. In contrast, the mentored teacher turnover rate was 4% for four years.

Even when those teachers who were not located by Odell and Ferraro are factored in, the turnover rate for mentored teachers over the four-year period comes to 16% for the two groups combined (4% turnover + 12% nonresponse). According to this calculation, the rate still falls below the state figure (assuming a constant rate of 9% per year) of 31-36%.

There are some limitations to the study, most of which are pointed out by Odell and Ferraro. First, there was no control group, nor was there an attempt to find similar, or matched districts to serve as the comparison. This is important since the districts in question might have already been higher-retaining districts (or at least higher than the state average). Second, Odell and Ferraro do not indicate how or why the districts were selected to participate in the study. Lastly, information about the districts themselves is woefully lacking.

5. Montana Beginning Teacher Support Program
In the early 1990s Spuhler and Zetler (1993, 1994, 1995) conducted an evaluation of the Montana Beginning Teacher Support Program (BTSP). The program lasted three years (1992-95). Volunteer mentors were placed with mentees for a year. Efforts were made to match mentor and mentee according to grade level and subject. But mentors were not provided with training in mentoring, nor was release time provided for either mentor or mentee.

Spuhler and Zetler's objective was to try to isolate the effects of mentoring from other aspects of new teacher support. In the first year of the study, there was no control/comparison group of non-mentored teachers, but a comparison group was added for the second and third year of the program. Each year the sample size was small, either 11 or 12 mentored teachers. Among the outcomes examined were retention rates for both mentored and non-mentored teachers. Data were collected via pre-and post-program questionnaire, which were sent to the participants, and retention data were supplied through a survey of individual schools and districts. As defined in the study, retention appears to have included all those who remained in teaching, even if in another school or state.

The study found positive effects of the program on retention – retention rates were higher for those who participated in the mentoring program than for the non-mentored comparison group. After the second year (there was no comparison group in the first year), 92% of the mentored teachers continued teaching, compared to 73% of the non-mentored. After the third year of the study, 100% of the new mentored teachers continued teaching the

following year, while only 70% of the non-mentored remained in teaching.

This was an informative study, but its generalizability is limited by its small sample size. Moreover, and perhaps related to the small sample size, Spuhler and Zetler did not publish any information on the statistical significance of their data findings.

6. Texas Study of New Teacher Retention
In the late 1990s Eberhard, Reinhardt-Mondragon and Stottlemyer (2000) conducted a study of beginning teacher attrition in South Texas that included data on the effects of mentoring on beginning teachers. They sent a survey questionnaire to all new teachers (defined as those with three years teaching experience or less) in South Texas The questionnaire included items on four aspects of mentoring: (1) whether the respondent was provided a model teacher (a veteran teacher observed by the new teacher); (2) whether the respondent was provided a mentor teacher; (3) if so, the number of hours spent per week with the mentor (less than one hour, 1-3 hours, more than three hours); (4) the new teacher's ratings of their satisfaction with the mentor program, if they were participants. Participation in the survey was voluntary, not all beginning teachers were included and the sample size was 228. Like the Brown and Wambach study of the California teacher induction program, this study looked at whether first-year teachers intended to remain in teaching the subsequent year – no data on actual retention or turnover were collected.

The study found some positive effects of mentoring programs, but these diminished with teachers' experience. That is, mentoring had more impact on new first-year teachers than those who had already had a year or two of experience. Those who had a model teacher in the first and second year were more likely to report they planned to continue than those who did not have a model teacher. Third-year teachers who did not have a model teacher were just as likely to continue teaching as those third-year teachers who did have a model teacher. Ninety percent of first-year teachers who had a mentor reported they planned to continue teaching, while only 61% of the non-mentored planned to continue. With second-year teachers, the numbers converged somewhat; 78% of those with mentors planned to continue, and 63% of those without mentors planned to continue. The third-year teachers were about the same (72% of those with mentor, 73% of those without).

Those who reported spending more than one hour per week with their mentor were more likely to say they planned to continue (90%) than were those who had less than one hour per week of contact time (76%). Not surprisingly, those satisfied with the mentor program were also more likely to say they planned to continue in teaching (85%) than those who said they were dissatisfied with the program (79%).

Overall, there seems to be quite a bit of useful data embedded in this study, but like some of the other studies reviewed, the statistical analysis was rudimentary. There appeared to be no attempt to control for teacher and school characteristics that might confound the results. Since participation in the study was voluntary, the data might not be an accurate representation of all beginning teachers. Moreover, there is no indication whether the findings were statistically significant or not. And, lastly, the survey only asked whether teachers intended to stay in the profession. While this is informative, the findings might have been more solid if some actual retention data had been collected.

7. Analyses of the 1993 Baccalaureate and Beyond Longitudinal Survey
In 2000 Henke et al. published an analysis that used the National Center for Education Statistics' 1993 Baccalaureate and Beyond Survey (B&B) to examine the experiences of new teachers, including the relationship between beginning teachers' participation in induction programs and their attrition. The B&B is a longitudinal survey that followed a nationally representative sample of those who graduated from undergraduate institutions in the 1992-93 academic year. This cohort was first interviewed during their senior year in 1993, then one year later in 1994 for a "First Follow-up" and a third time in 1997 for a "Second Follow-up." The base sample that participated in all three interviews comprised 7,294 students. Henke et al's analysis focused on the experiences of those college graduates from the class of 1992-93 who entered elementary or secondary teaching.

Among other things, the B&B questionnaire in both 1994 and 1997 asked those who had entered teaching whether they had participated in an induction program, such as mentoring, since becoming a teacher. Forty-six percent of those who entered teaching reported they had participated in a school induction program. The analysis examined the proportions of these new teachers from the graduating class of 1992-93 who were still teachers at the end of the 1997 academic year. The report found a 21% rate of new teacher attrition by spring 1997 – that is, about one-fifth of recent college graduates who had entered teaching between 1993 and 1997 were no longer teaching by July 1997

The analysis also showed that participation in induction was significantly and negatively related to attrition from

the occupation. Fifteen percent of those who had participated in induction had left teaching, compared with 26% of those who had not participated in such a program. These findings provide evidence from a national survey that teacher induction seems to decrease teacher attrition.

There are, however, several important limitations to the B&B data and to the Henke et al. analysis. First, the item on teacher induction was a simple yes/no dichotomous question and provided no detail on the type, characteristics or components of assistance provided. There is, for example, no way of knowing whether the induction program actually included a mentoring component or not.

Second, the B&B survey focused on new teacher hires that were fresh out of college and had no prior teaching experience. It is important to note that this group represents only a subset of all those hired into teaching jobs in any given year and, hence, only a subset of all those who did or did not participate in induction programs in any given year. Besides recent college graduates, there are, for instance, entrants coming from other occupations, delayed entrants (those who had completed their teacher training but delayed teaching) and re-entrants (those who had taught in the past) (Ingersoll 2001). It is not known if the B&B subset of recent college graduates has similar or different induction needs and attrition rates than other types of new hires.

Third, the Henke analysis of the relationship between induction and attrition is based on bivariate correlations of one factor with the other. There are, of course, numerous factors that could account for differences in teacher attrition and also for any apparent connection between teacher induction and teacher attrition. It is reasonable, for example, to expect that particular kinds of schools have more teacher attrition than others, regardless of the degree of assistance provided to new hires. Alternatively, any relationship between induction and teacher attrition could be spurious, that is, the result of other, more fundamental, factors related to both. For instance, the affluence of a school's community might impact both whether it provides induction services and its amount of teacher attrition. In order to determine whether there is, in fact, a relationship between induction and attrition, it is necessary to control for, or hold constant, these other kinds of factors – something which the analysis did not do.

8. Analyses of the 1990-91 Schools and Staffing Survey

Using data from the National Center for Education Statistics' 1990-91 Schools and Staffing Survey (SASS) and its supplement, the 1991-92 Teacher Followup Survey (TFS), Ingersoll (1997, 2000, 2001) conducted a series of statistical analyses of the prevalence of school mentoring programs, the extent of effective assistance provided to new teachers and the effects on job satisfaction and teacher turnover.

The 1990-91 SASS was a nationally representative survey of 11,582 principals and 53,347 teachers from both public and private schools. Twelve months after the administration of the SASS questionnaires, the same schools were again contacted and all those in the original teacher sample who had moved from or left their teaching jobs were given a second questionnaire to obtain information on their departures. This latter group, along with a representative sample of those who stayed in their teaching jobs, constituted the 1991-92 TFS. The sample contained 6,733 elementary and secondary teachers.

The SASS school questionnaire asked principals whether their schools had a formal program to help beginning teachers such as a master or mentor teacher program. The SASS teacher questionnaire asked respondents about their degree of agreement with the statement "this school is effective in assisting new teachers" for four related items: student discipline, instructional methods, curriculum and adjusting to the school environment. Analysis of these data indicated that formal programs to help new teachers were common in schools, but that effective assistance, as reported by teachers, was not.

About 60% of principals reported their school offered some kind of formal mentoring program to help beginning teachers, but in only about one-fifth of schools did the teachers "strongly agree" that, on average, assistance for newcomers, from either mentoring programs or other sources, was effective. Indeed, the data showed that having a formal mentor program appeared to have little to do with whether teachers reported their schools to have provided effective assistance. That is, there was little correlation between teachers' reports of the effectiveness of assistance and whether a school had a mentor program or not. In either case, in only about 20% of schools did the staff strongly agree that assistance was effective (Ingersoll 1997, 2000).

Ingersoll (1997) then examined the effects of both of these school-level measures – having a mentor program and effective assistance – on teacher job satisfaction, while controlling for a number of background characteristics of both teachers and schools. The measure of teacher job satisfaction was based on a survey question that asked all teachers, "If you could go back to your college days and start over again, would you become a teacher or not?" The answer scale ranged from 1 (certainly would not become a teacher) to 5 (certainly would become a teacher).

The analysis found that the existence of a mentor program in schools had a small inverse relationship to overall teacher job satisfaction. Teachers, including both beginners and veterans, in schools with mentoring programs reported slightly less satisfaction overall. On the other hand, the analysis showed effective assistance had a strong positive effect on job satisfaction. Teachers reported more job satisfaction in schools where the faculty on average reported more effective assistance for new teachers. One interpretation of these results is that having a mentoring program per se is less important than whether effective assistance is provided to newcomers, regardless of whether from formal or informal mechanisms.

In a second analysis, Ingersoll (2001) examined the relationship between the measure of effective assistance and actual teacher turnover. This analysis found a strong relationship between the degree of effective assistance for new teachers and the likelihood of teacher departures. The latter included both those who moved to teaching jobs in other schools and those who left the occupation altogether and included both beginners and veterans. After controlling for the characteristics of teachers and schools, the analysis showed that the odds of a teacher departing from their school were 92% lower in schools where the teachers, on average, strongly agreed that assistance was effective, than in schools where the teachers strongly disagreed.

The advantage of this kind of "multivariate regression analysis" of large-scale data is its breadth. The survey data represent a wide range of teachers and schools across the nation and also allow the analysis to control for a wide range of other factors that might conceivably affect the outcome of interest. The disadvantage of this kind of large-scale data analysis is its lack of depth and specificity. The survey questionnaire items were very general and provided little detail on the characteristics and components of either mentoring programs or of "effective assistance."

Moreover, the objective of this particular project was not to focus on beginning teachers and the effects of assistance on their job satisfaction and their turnover. Instead, its objective was to examine the relationship between school characteristics (including having a mentoring program and having effective assistance for newcomers) and the job satisfaction and turnover of all teachers. As a result, there are serious limits to the degree to which this study addresses the question of mentoring effectiveness.

9. Analyses of the 1999-2000 Schools and Staffing Survey

In a follow-up analysis, Ingersoll and Smith (2003) used more recent SASS/TFS data to focus on the effects of participation in various mentorship and induction activities on the turnover of first-year teachers. The 1999-2000 SASS included a new expanded battery of items in its' teacher survey questionnaire on the content and character of teacher induction and mentoring programs in schools. Ingersoll and Smith used these data, linked with preliminary data from the 2000-2001 Teacher Followup Survey (as of summer 2003 the most recent TFS had not yet been entirely released) to undertake an analysis of the impact of participation in various mentorship and induction activities on the likelihood that beginning teachers left teaching at the end of their first year, moved to a different school or stayed in the same school to teach a second year.

This review for ECS focused on the results pertaining to attrition – those who left teaching altogether before their second year. The 1999-2000 SASS sample was comprised of about 52,000 elementary and secondary teachers. Ingersoll and Smith focused solely on beginning teachers – those without prior experience and in their first year of teaching in 1999-2000 – a national sample of 3,235.

The analysis examined the impact of three sets of induction-related measures drawn from survey questionnaire items. The first set of measures concerned participation in mentorship activities. These items asked teachers whether or not they were working closely with a master or mentor teacher and if so, whether or not the mentor was in the same subject area. The new teacher also was asked to report the extent to which their mentor was helpful.

The second set of measures focused on participation in collective induction activities. These items asked teachers whether or not they participated in some kind of formal induction program, as well as whether or not they had any of the following specific collective supports: (1) common planning time with other teachers in their subject area; (2) seminars or classes for beginning teachers; (3) regular or supportive communication with their principal, other administrators or department chair; (4) regularly scheduled collaboration with other teachers on issues of instruction; and (5) participation in a network of teachers (e.g., one organized by an outside agency or over the Internet).

The third set of measures focused on the provision of extra resources. These items asked teachers whether or not they received additional assistance to help ease their transition, including (1) a reduced teaching schedule, (2) a reduced number of preparations or (3) extra classroom assistance (e.g., teacher aides).

Ingersoll and Smith began by examining whether any of these variables were individually associated with attrition, after controlling for the background characteristics of the teachers and their schools. They found that while most of the induction-related activities were linked to attrition in the expected direction – that is, with a decrease in attrition – only a few were statistically significant at a 90% or higher level of confidence.

The results of the analysis showed that having a mentor in the same field reduced the risk of leaving at the end of the first year by about 30%, a result that was statistically significant at a 93% level of confidence. On the other hand, having a mentor outside of one's field did not reduce the likelihood of leaving to a statistically significant degree.

Ingersoll and Smith also found that, by themselves, neither participation in a general induction program nor participation specifically in seminars or classes for beginning teachers reduced the risk of leaving teaching at the end of the first year at a statistically significant level. Having common planning time with other teachers in their subject area, however, reduced the risk of leaving by about 44%, at a statistically significant level. Participating in regularly scheduled collaboration with other teachers on issues of instruction reduced the risk of leaving by 27%, at a statistically significant level. Participation in an external network of teachers (e.g., one organized by an outside agency or over the Internet) reduced the likelihood of leaving by about 44%, at a statistically significant level. Finally, the effect of regular supportive communication with their principal, other administrators or a department chair was not statistically significant.

For the third set of induction-related activities – additional resources for new teachers – Ingersoll and Smith found that while none had a statistically significant impact on attrition, two of the three variables – a reduced teaching schedule and having a teacher aid – had an association in an unexpected direction. That is, both were associated with increases in attrition. Ingersoll and Smith also found, however, that these activities were relatively uncommon in schools compared to other induction activities or components.

The data also showed that few of the above various activities or practices operate in isolation. To get a sense of the joint impact on attrition of participating in multiple related activities, Ingersoll and Smith calculated the additive effect of several induction "packages," each involving progressively more components. They found that because the impact of a number of these activities was not strong enough individually to be statistically significant did not necessarily mean they are of no value as components in a more comprehensive induction program.

The data showed the predicted probability of attrition among teachers who did not participate in or receive any of the induction-related activities was about 20%. Those teachers who received a minimal package of just two components – some kind of mentor (in or out of the mentees' field; helpful or unhelpful from the beginning teacher's perspective) and participation in a beginning teachers' seminar – had an 18.4% probability of leaving, which is a difference that was not statistically significant. Forty-eight percent of beginning teachers in 1999-2000 received only these components.

In contrast, first-year teachers who received a more enhanced package of three components – a helpful mentor in their field, common planning time and collaboration with other teachers on instruction – had an 11.8% predicted probability of leaving, which turns out to be a statistically significant reduction. Twenty-two percent of beginning teachers received the components in this package.

A third package contained six components: (1) a helpful mentor from the same field; (2) an induction program; (3) a seminar for beginning teachers; (4) common planning time with other teachers in their subject area; (5) regularly scheduled collaboration with other teachers on issues of instruction; and (6) regular or supportive communication with their principal, other administrators or department chair. This package was experienced by 13% of beginning teachers in 1999-2000 and was also associated with a large and statistically significant reduction in turnover. Those participating in this third package had a predicted probability of leaving of 11.6% – a result only slightly better, however, than for the three component package.

A fourth and even more comprehensive package consisted of eight components: all those in the third package, with the addition of participation in an external network of teachers and having a reduced number of course preparations. Participation in these activities, collectively, had a very large and statistically significant impact – the probability of leaving at the end of their first year for those receiving all the components of this package was 7.1% – less than half the rate of those who participated in no induction experiences. This comprehensive program, however, was also scarce – less than 1% of beginning teachers in 1999-2000 experienced all its components.

This analysis offers some strong findings, especially for the advantages of bundles and packages of multiple

induction components. As with the earlier-reviewed secondary analyses, the advantage of using large-scale data is that it allows general assessments of whether induction and mentoring are associated with teacher attrition, after controlling for some of the key background characteristics of teachers and their schools. Moreover, the 1999-2000 SASS/TFS included far more survey questions on teacher induction and mentoring programs than did earlier databases.

Nevertheless, the 1999-2000 SASS items provide limited depth and detail on the content and character of teacher induction and mentoring. For example, while the survey did ask teachers to indicate which kinds of supports were provided by their schools, little information was obtained on the intensity, duration, cost or structure of induction and mentoring programs – information of vital importance to policymakers who must decide among many alternative models. The analysis tells us, for example, that beginning teachers with mentors from the same field were less likely to leave after their first year, but no doubt lumped together indiscriminately in the responses for the mentoring question were many very different kinds of programs. Some of these programs are probably highly effective, some are probably moderately effective and others probably not effective at all. The analysis, unfortunately, cannot tell us which are which.

Similarly, while the 1999-2000 SASS did ask teacher mentees to evaluate the helpfulness of their mentors, there was little else obtained on the characteristics of the mentors. Some observers have argued that the mere presence of a mentor is not enough; the mentor's knowledge of how to support new teachers and skill at providing guidance are also crucial (e.g., Kyle, Moore et al. 1999; Evertson and Smithey 2000). These are important policy issues that SASS data cannot address.

10. Texas Beginning Educator Support System

The State Board for Educator Certification (Fuller 2003) along with the Charles A. Dana Center (2002) at the University of Texas at Austin, conducted evaluations of the Texas Beginning Educator Support System (TxBESS) in 2002 and 2003. Begun in 1999, TxBESS was a statewide comprehensive program of instructional support, mentoring and formative assessment to assist teachers during their first years of service in Texas public schools. Teacher mentors, along with other support-team members such as school and district administrators, education service center staff members and faculty members from teacher preparation programs, offered guidance and assistance to beginning teachers during their first years on the job. One key program objective was to improve beginning teacher retention in Texas. About 15% of new teachers in the state were involved in the program.

The study obtained information from participants through an annual mailed survey questionnaire. Among other things, the survey sought information on the nature of the relationship between the individual mentors and mentees, including: time spent with mentor, whether release time was granted (both to mentor and mentee) for these meetings, whether a mentor was desired by the mentee and the nature of the meetings with the mentor (e.g., formal vs. ad hoc, to provide assistance with classroom management, to assist with learning the "unwritten rules" of the school, etc.).

Data on teacher retention were obtained from a state personnel database. Retention included those who remained in Texas public schools for the following year, including those who moved from one Texas public school to another. Turnover included those no longer employed in a Texas public school the following year, including those who left Texas but took a teaching job in a public school in a neighboring state. The study compared annual retention rates of the TxBESS participants with those of all beginning teachers in the state from the 1999-2000 through the 2002-03 school years.

The study found program participation had positive effects on beginning teachers' retention. In an analysis of the cumulative retention of the first cohort that entered in the 1999-2000 school year, Fuller (2003) found that TxBESS participants left teaching at lower rates than beginning teachers who had not participated in TxBESS for each of their first three years on the job. After year one, 89.1% of beginning teachers who went through the TxBESS program returned for a second year of teaching, while 81.2% of nonparticipant new teachers did so – a difference that was statistically significant. After their second year, 82.7% of participants remained, while only 74.3% of nonparticipants did so – again, a statistically significant difference. After their third year, 75.7% of participants remained, while only 67.6% of others did so – again, a statistically significant difference.

Several aspects of the Fuller study make it particularly valuable. First, Fuller found similar program effects (in both magnitude and statistical significance) on retention in both high-poverty and high-minority enrollment schools. This was important because these schools generally have higher attrition of new teachers. Such schools also had higher numbers of their beginning teachers in the TxBESS program. Second, Fuller found that these effects held up across all school levels. In fact, elementary, middle and high schools all had significantly higher retention of TxBESS participants. Finally, Fuller found that TxBESS appeared to be especially helpful for underqualified

teachers. TxBESS participation by beginning teachers who did not hold full certification or those who were assigned to teach subjects out of their certification, was related to improved retention over similarly underqualified teachers who had not participated.

TxBESS is a well-known example of a state teacher induction program. Among the many studies examined for this ECS review, the above-discussed research and evaluation stands out for its usefulness and the findings provide a strong endorsement for the TxBESS program.

There are also several limitations worth noting. First, school districts had discretion in the selection of participants for the program. Differences in retention rates could be due to selection bias if the participants were either self-selected or if they "qualified" for inclusion. Second, for the purposes of this review, it is not possible to separate out the effects of mentoring programs themselves, since they were only one component of the larger TxBESS program and school districts had discretion over which components they used. The data do indicate a large degree of variation across the state in what the program entailed.

For instance, some program participants had a mentor, some did not and some mentors had more than one mentee. Some mentees met with their mentors weekly, others met once a month (or less), and some mentors taught the same subject as their mentee, while others did not. There were some districts in which all beginning teachers had a mentor and other districts with very few (if any) mentors for the beginning teachers.

Conclusions and Implications

All 10 studies reviewed here provide some empirical support for the claim that assistance for new teachers – and in particular, teacher mentoring programs – have a positive impact on teachers and their retention. These findings should indicate to policymakers and education leaders that there is promise in the use of induction and mentoring as a means of reducing high rates of teacher turnover. It is important to consider, however, that some of the research indicates the impact of induction and mentoring may be minimal unless these programs either include or are supplemented by other important elements.

At the same time, it must be recognized that all the studies examined here also have some serious limitations. And these limits have implications for the kinds of conclusions that can be collectively drawn from them. As discussed, most of these studies do not or are not able to control for other factors that also could impact the outcomes under investigation. For example, it is reasonable to assume that the type of school in which teachers are employed will have an effect on outcomes such as teacher job commitment and retention, regardless of the existence of an induction or mentoring program. In order to determine whether there is a relationship between induction and these outcomes, it is necessary to control for, or hold constant, these other kinds of factors.

Moreover, most of these studies do not or are not able to clarify the criteria for selection and program participation. As with school characteristics, the persons who do or do not participate in programs also could have an impact on outcomes, regardless of the effect of the program itself. For instance, in the case of a voluntary program, the same individuals who choose to participate may also be individuals who are more committed to teaching.

Finally, the content, duration and delivery of programs are so varied from one site to another it is not clear to what extent general conclusions about mentoring and induction can be drawn from any given study. As a result, there remain a number of pressing policy questions that cannot yet be answered with confidence. Among these are:

1. **Who gets helped most?** For example, are induction and mentoring programs particularly helpful for new teachers whose formal preparation is relatively weak, or are they helpful regardless of the quality of pre-classroom preparation?

2. **Which components or sets of components are best?** Which elements, supports and kinds of assistance make induction and mentoring programs most helpful in addressing the various weaknesses among new teachers with differing backgrounds?

3. **Which components are best for which outcomes?** Which aspects of induction and mentoring programs contribute most to the increased retention of new teachers? Do these differ from the factors that contribute most to teachers' enhanced classroom effectiveness?

4. **Do the selection, preparation, training, assignment and compensation of mentors make a difference?** Is there a significant difference in effectiveness between induction and mentoring programs depending upon who does the mentoring and how they are chosen and treated? Are there negative effects

of some mentors? Do some mentors, for example, implicitly or explicitly stifle innovation on the part of beginning teachers?

5. **How much contact time is necessary between mentor and mentee?** Is there a significant difference in effectiveness depending upon the amount of contact between new teachers and their mentors?

6. **How long do mentoring programs need to be?** Is there an optimum program length for induction and mentoring programs, beyond which additional time is of diminishing value?

7. **Does mentoring matter for student growth and achievement?** Is it possible to document links between teacher participation in mentoring and gains in student outcomes?

All these questions warrant investigation. What is *not* needed, however, are more studies that do not involve the kind of careful control that would allow unambiguous conclusions about the particular value added by the program component being considered. This review has found many such studies already exist. In contrast, conspicuous by their absence in this field are careful, randomized or quasi-randomized experimental studies involving random-assignment procedures and controlled trials with a no-treatment control group. This kind of approach is perhaps the most expensive, but also is potentially the most fruitful.

Addressing the above questions will not always require new data collection. State induction programs such as the TxBESS program in Texas and the BTSA (Beginning Teacher Support and Assessment) program in California have entailed extensive data collection that could possibly support more advanced statistical analyses than have thus far been conducted. The same applies to some existing national databases, such as NCES' 1993 Baccalaureate and Beyond Longitudinal Study, discussed earlier, and two lesser-known sister surveys also undertaken by NCES – the 1998 Teacher Survey on Professional Development and Training and the 2000 Survey on Professional Development and Training in U.S. Public Schools (see Smerdon et al. 1999 and Parsad et al. 2001). These databases are limited by a small number of items on teacher induction, but their advantage, so far underutilized, is their ability to control for other factors and to support conclusions that can be widely generalized. Both involve large nationally representative samples and both collected data on many teacher and school characteristics in addition to information on participation in induction programs.

While current research does not yet provide definitive evidence of the value of mentoring programs in keeping new teachers from leaving the profession, it does reveal that there is enough promise to warrant significant further investigation. At the very least, the findings of this paper indicate that policymakers and education leaders should consider investing more time and resources into developing carefully controlled studies to better identify the links between mentoring and teacher retention.

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