

Retaining Beginning Mathematics Teachers in the United States

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Abstract

Nearly forty percent of teachers in the United States leave the profession within the first five years. However, this number is higher for teachers of mathematics. In explaining the problems with mathematics teacher shortages in the United States, this paper discusses the literature explaining and strategizing on the issues reported by teachers who left the profession. Implications and strategies for reducing this problem are reported with the most effective strategies to date being better mentoring, stronger professional development, and effective peer collaboration.

Introduction

Many school systems in the United States are faced with overpopulation and intense growth in student enrollment. These issues can leave an abundance of teaching positions unfilled with quality teachers. This brings up the point of whether the issue lies in retaining the teachers hired or in the recruitment strategies of school systems. In 2007, the National Center for Education Statistics (NCES) reported in their 2004-2005 Teacher Follow-up Survey that nearly twenty percent of U.S. teachers leave teaching after their first year in the profession and that the number jumps to almost thirty percent after the first four years of teaching. These numbers are even higher for mathematics teachers. These statistics make it clear that the recruitment of quality teachers would not be as problematic if the retention of the previously hired teachers improved and Ingersoll (1997) states there would be no shortage of mathematics teachers if school systems could retain those they hired.

Conversely, American universities are producing high numbers of K-12 teachers. In 2001, the NCES completed a study on college graduates and reported in one year ten percent of them were employed full time as K-12 educators. In a comparison of retention rates, education fields were in third place behind much broader fields such as “sales and service occupations” and “business support and financial services occupations.” The NCES also reported three years later, only eighty-two percent of those teachers studied remained in the teaching profession. With the high percentages of graduates in education and the alarming statistics of their retention years later, many questions are raised: Why are so many U.S. teachers leaving the profession? What research has been reported offering suggestions that can help improve upon retention rates? The majority of teacher retention studies encompass teachers of all disciplines and grade levels due to the overwhelming needs of quality teachers in all areas. Due to the fact this is a problem in all subject areas, I have found few studies of empirical data for teachers of mathematics. These studies generally seem to parallel the studies of teachers in all areas. Consequently, the following implications and hypotheses made can be effective for mathematics teachers as well as teachers in other areas.

Reasons for High Attrition

Every educator and non-educator can provide anecdotal reasons as to why teachers leave the profession. Many of these hypotheses include violence and misbehaved students, weak administration, salary, and retirement. Smith and Smith (2006) attempted to show violence was an issue for teachers who left urbanized schools. However, none of the interviews conducted failed to relate the teacher departures to specific acts of violence in the schools, but rather to a

combination of other ideas such as stress and unsupportive communities. This does not completely eliminate misbehaving students as a contributing factor. In particular, Makkonen (2005) believes that stronger discipline policies within the school districts and individual schools can lessen the rate at which teachers leave the profession. Can it make a large difference? Most likely not, but it might make teachers happier and that seems to be a good reason to stay in the profession. Retirement is another reason as to why the retention rates are so low. The 2007 version of the Teacher Follow-up Survey also reports that of the teachers leaving the profession in the 2005-2005 school year, thirty-one percent left due to retirement. This shows retirement is a contributor to the attrition but is not the main reason teachers chose to leave the profession.

Although many of those hypotheses may be reasons for a vast number of teacher departures, the Teacher Follow-up Survey (2007) reports the most significant reason teachers abandon the profession is to pursue a career outside the field of education, which was reported twenty-five percent of the time. Other issues consisted of pregnancy, family and personal reasons, child rearing, health problems, and family relocations. Pregnancy usually results in a short-term departure and family relocations do not always mean a teacher must leave the profession. I have to consider the satisfaction of the teachers in their profession and question whether this is what prevents them from returning to the profession after child birth, relocation, or a long-term sickness.

Subsequently, teachers reported dissatisfaction with the teaching profession as the reason for their departure only sixteen percent of the time (NCES, 2007). This report of blatant dissatisfaction is where the concern lies. With some proper interventions, this sixteen percent of educators could be retained, as well as the twenty-five percent who left to pursue a job in another field. The reasons stated as being important for teacher's decisions to leave their school, in order of popularity, were: opportunity for a better teaching position, lack of administrative support, poor working conditions, and the school's proximity to their home. Less significant factors included: higher job security, involuntary transfers, dissatisfaction with responsibilities, and salary.

Salary and benefits are other recurring factors in studies on teacher retention. According to the United States Census Bureau (2004), the average salary for public school teachers in grades Kindergarten through twelve is \$44,700. The state-wide averages ranged from South Dakota, the lowest at \$31,300, to California, the highest at \$54,300. Hanushek, Kain, and Rivkin (2001) studied various salary increases with assorted populations of teachers and how the changes affected attrition. It was reported that higher salaries would reduce the rate teachers leave a district. More specifically, it was reported that a ten percent increase in salary would reduce the attrition rate by only three percent, which seems to be an insignificant finding. Another interesting option in lieu of across the board salary increases is the option for a career ladder for teachers or a differentiated pay structure. Many educators are witnessing their friends and family in other fields move up a career ladder while they very slowly move up a teaching scale with little or no differentiation. For example, some school systems implement educational career ladders where their teachers can be recognized for their experience and successful classroom performance. Adams and Adams (2003) report on the strategy in place by the Cincinnati Public School System that allows teachers to progress to differentiated levels allowing them to gain responsibilities as well as additional salary. These responsibilities include subject area leaders, lead teachers, team leaders, consulting teacher, curriculum specialist, curriculum council chair, or program facilitator.

Quantitative reports resulting from surveys of teachers do not always seem to find the true reasons teachers leave the profession, only a quick response that can be labeled as an excuse for

a reason to flee a profession in need. The most veracious opinions are normally found in a qualitative interview where a teacher has formed a personal bond with a researcher. In these studies, it is important to stress the interventions that would have helped those novice teachers through their difficult first years of teaching. These studies usually reveal some smaller, helpful strategies, but in time, they all report on three glaring needs in new teacher education: Stronger professional development (Richin et al., 2003; Stevenson et al., 1999; Cwikla, 2002; Makkonen, 2005; Hoff, 2000), more effective mentoring for new teachers (Adams & Adams, 2003; Harrison et al., 2006; Cwikla, J., 2004; Brown, S. W., 2005; Richin et al., 2004; Makkonen, 2005; Ingersoll & Smith, 2004; National Commission on Teaching and America's Future, 2003; Hoff, 2000), and productive peer collaboration (Brown, 2005; Cwikla, 2004; Cwikla, 2002).

Stronger Professional Development

Professional development is a more formal form of collaboration for educators. It is widely used in all areas of the professional world to support employees and help them grow as specialists in their fields. All teachers in the United States are required to attend professional development seminars to improve their strategies and to support continuation of their teaching licenses. The problem is that many seminars and workshops are deemed unnecessary and time-consuming by the teachers attending them. The problem lies in the correct balance of quantity and quality of professional development. Cwikla (2002) suggests in order to improve professional development, teachers should be grouped according to their mathematical background, years of experience, and by their views of learning. By having teachers answer a short survey before activities, their responses could be used to sort the teachers accordingly to avoid negative discourse and proper grouping to maximize teacher learning.

In a study aimed to compare teacher perspectives with administrator perspectives, it was found that their similar views were shared by administrators and teachers. Better professional development was the top strategy suggested that would have convinced teachers to stay (Stevenson, Z., Dantley, S. J., & Holcomb, Z. J., 1999). Richin, Banyon, Stein, and Banyon (2003) suggest a detailed and rigorous form of professional development for teachers in the first three years in the profession. Their plan supports connections with other staff members in all disciplines forming bonds across the school and supporting mentoring among new teachers. During the first three years, teachers are supervised, observed, evaluated, and trained in best practices to enhance their instruction. This plan is designed to support and retain quality and experienced teachers.

More Effective Mentors

In the current form of teacher mentoring in the United States, the mentor has become an evaluator instead of a true mentor (Adams, K. L., & Adams, D. E., 2003). Clutterbuck (1992) defined a mentor as "a more experienced individual, willing to share his/her knowledge with someone less experienced in a relationship of mutual trust" (as cited in Harrison, J., Dymoke, S., & Pell, T., 2006). Albeit broad, this definition focuses on the aspect of mutual trust. In this same study, through interviews with newly qualified teachers, it was inferred that an effective mentor must be able to listen and empathize with the teacher, be flexible enough to be able to meet with the mentor on a regular basis, and be able to reflect and synthesize with the teacher. To support the flexibility, Hoff (2000) suggests that the mentor should have a reduced teaching load and minimal extra duties so that they can effectively support the new teacher.

Other suggestions made for increased retention of new teachers were to reduce the workload for the new teacher (Ingersoll, R. M. & Smith, T. M., 2004) instead of the mentor and incorporate more observations of the mentor and other experienced teachers into the new teacher's schedule (Cwikla, 2004). Both of these are effective strategies, but to be completely efficient, they must be incorporated together so the new teacher has adequate time to complete the observations in addition to their daily paperwork and planning.

Productive Peer Collaboration

Peer collaboration can be seen as a form of informal professional development. Due to the similarities, Cwikla (2002) lists peer collaboration as a form of professional development. It can happen in the cafeteria, walking to their cars, library, teacher's lounge, or anywhere teachers correspond with each other. Many teachers actually report negative interactions within their subject area department colleagues, and department meetings are seen as a waste of time (Cwikla, 2004).

Teachers need a positive form of collaboration within their content areas that many are not receiving. It is important for teachers to be able to participate in meaningful communication where they can share ideas with others who have the same concerns. Brown (2005) also stresses the importance of not isolating new teachers. Due to the lack of seniority, many new teachers are forced to teach in classrooms where they are subjected to isolation. Because of the overcrowding of schools in many areas, school systems have resulted in the use of "mobile classrooms" that are added to parking lots and empty fields on the school grounds. This results in a lack of collaboration among teachers, and this isolation forces many teachers to feel unappreciated and unsupported by their administration.

Further Implications

Many researchers have found other strategies for improving the teacher retention rates in the United States. Considering the current state of despair the teaching profession is in, any strategy would seem helpful. The National Commission on Teaching and America's Future (2003) reports the starting point would be the teacher preparation programs in the colleges and universities. They believe improving these programs will create better qualified teachers who are better prepared to cope with the challenges faced by teachers today. They also believe teachers need to be further trained in technology to be able to continue competing against other more technologically advanced professions. Another small but helpful suggestion made by Quinn and Andrews (2004) would be for each school to create a beginning teacher's handbook for their new teachers to help orient them to tasks that may seem menial to more advanced teachers, but could help a new teacher feel more comfortable.

A complaint made specifically from new math teachers is the lack of content knowledge from the more experienced teachers. Cwikla (2004) reports many new teachers feel frustrated when attending professional development seminars that consist of a review of mathematical concepts because many of the teachers are unaware of the mathematical topics outside of their realm of teaching. This seems to contradict the finding of Reys & Reys (2004) and Paul (2005) who theorized that college mathematics courses are too difficult, and they may greatly reduce the number of potential teachers for mathematics. This is discouraging since according to Reys & Reys (2004) thirty-three percent of students in grades seven through twelve do not have a mathematics teacher with a major or minor in the field. By reducing the national standards, that number may be lowered to a smaller percentage, but those teachers are still lacking the mathematical knowledge needed to bring mathematics teachers' experiences and education up to the same standard of other fields.

It seems there are many factors plaguing the United States educational system. Retaining the teachers hired during the extensive recruitment strategies is just one piece to a very large puzzle. Until there is a qualified and effective teacher in the majority of classrooms, our profession will continue to be a profession at risk due to the overwhelming shortages and booming population of urban areas in our country. The influx of students packing schools in many areas of the United States is creating additional

teaching vacancies. This, in addition to the nearly forty percent of teachers leaving the profession within the first five years, is creating a teacher shortage needing creative ideas and effective approaches to combat one of the greatest educational needs of the twenty-first century.

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