

## **An Assessment of Secondary Principals' Leadership Behaviors and Skills in Retaining and Renewing Science Educators in Urban Schools**

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### **ABSTRACT**

**Fostering the growth of science educational programs is one of the most challenging and rewarding tasks instructional leaders will have to do in the twenty-first century. This article analyzes the current science teacher shortages and turnovers in public, urban secondary schools and brings to the forefront the need for an assessment of instructional principals' leadership behaviors and skills to discover the types of influential behaviors that cause science educators in middle and high schools to remain in the profession. These key leadership behaviors garnered in this study should be promoted and indoctrinated by school leaders to evoke change throughout science programs across the United States.**

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## **Strong Leadership Is Vital for Any Organization**

**S**chool leadership is imperative for schools to function successfully. Strong leadership is vital for any organization to operate efficiently, effectively, and purposefully. Principals are seen as the foundation for instructional leadership at the school level (Sergiovanni, 1998). Transformational school leaders working in America's urban public schools are discovering new ways to retain, renew, and recruit science educators. According to Howard (2003), instructional leaders who provide opportunities for professional development, support teachers' innovations, and create a collegial work environment is critical to the development of optimal school settings. Students have the right to have access to highly qualified science teachers in their classrooms. According to Dantley (2004), with the passing of the No Child Left Behind Act in 2001, schools are mandated to hire highly qualified teachers and provide every child the opportunity to achieve at high academic standards. It is the goal of principals working in these institutions to ensure that the law is being carried out so that every child on their campus improves their academic achievement levels.

### **Focus of the Article**

The purpose of this article is to discuss the premise for assessing secondary principals' behaviors and skills in retaining and recruiting science educators in urban schools. One intention of the study is to provide useful data on principals' leadership behavior regarding the retention and renewing of science teachers in urban schools as a means to cultivate a national climate of change in student science achievement. The main factor that causes science teachers to stay or leave urban schools based upon principal leadership is job dissatisfaction due to a lack of administrative support and poor salary (National Science Teachers Association, 2000). With the onset of a national decree by President Bush in his 2006 State of the Union speech, school leaders must ensure the American public that their schools are creating strong science students with the ability to compete in a global market. Businesses are calling for competent workers grounded in scientific thought and are requesting that this need be met by graduating students who do not have to be trained on the job. As a result, school leaders are challenged to develop outstanding science students. One of the best ways of ensuring quality science students on the secondary level is to have administrators hire and retain quality science educators on a continual basis.

### **Critical Need for Science and Mathematics Teachers**

The National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century projects state that there will be a need for 240,000 science and mathematics teachers in secondary education over the next decade (U.S. Department of Education, 2000). Ingersoll (2000) writes, “Notably, math/ science teachers are significantly more likely to move from or leave their teaching jobs because of job dissatisfaction than are other teachers (40 percent of math/ science and 29% of all teachers).” Additionally Ingersoll (2000) denotes that “science and mathematics teachers are 11% of the total teaching force, with 22% in elementary or middle schools, 73% in secondary schools, and 5% in schools with grades K-12.” Howard (2003) argues that notably urban school experience high teacher shortages “where many students are perennial underachievers, will feel its most damaging effects at a time when they can least afford to sacrifice teacher quality and quantity.” Moreover, Howard (2003) writes “shortages are prevalent at the secondary levels than at the elementary levels.” As American schools endure progressively worsened science teacher shortages, school districts have notably been trying to discover ways to recruit new science teachers and bring them into the secondary school setting.

Urban schools, unlike many schools located in rural or suburban areas, are plagued with many unqualified science teachers. Sterling (2004) emphasizes teachers without science backgrounds are being asked to teach science to fill in the science teacher shortage. However, this adds to the problem because these under-qualified teachers are not remaining in the teaching field. Moreover, students that attend high poverty, urban schools have a fifty percent chance of getting teachers in science that are unqualified. In the same study, Sterling (2004) emphasizes that this problem exists because science teachers are more likely to leave the profession compared to other subject area teachers.

A quality education in science must be provided to all students. Darling-Hammond et. al (2000) argues that teacher shortages are exacerbated in science. According to Ingersoll (2001), urban schools have higher retention problems than rural schools. Equity in attaining resources and highly qualified teaching candidates in urban schools has proven to be lacking in metropolitan schools in large cities. Secondary principals working in large, urban schools should implement strategies to retain, recruit, and renew staff in an effort to circumvent the nationwide shortage of science teachers in an effort to improve student science achievement at their campuses. One measure is to assess secondary principals’ instructional leadership behaviors at these large campuses. Principal leadership will be the key for school systems to be successful (Fullan, 2001).

According to Ingersoll (2004), high- poverty public schools in urban communities lose about twenty percent of their faculty each year. Science teacher turnover rates, in another study by Ingersoll (2000), occur at a rate of sixteen percent as compared to all teachers who leave at a rate of fourteen percent a year. He cites that the main reason science educators leave the teaching field is because of job dissatisfaction. The most common reasons given in his study were as follows: low salary, lack of support from their administration, student discipline problems, lack of student motivation, and a lack of influence over school decision making. However, in the same study, Ingersoll discovers

that science teachers do not leave because of large class sizes, intrusions on classroom time, lack of planning time, or because of the lack of opportunity for professional advancement.

With the mandate set by the No Child Left Behind Act (2004), secondary principals must be able to produce high levels of student achievement and hire highly qualified teachers. This law requires that all schools, especially those in large metropolitan cities with high poverty and predominantly large minority populations, hire and retain educators who have full credentials in the field in which they teach. Urban schools, especially those on the secondary level, have a larger percentage of teachers hired who are either teaching out of their subject matter or not certified (Howard, 2003). Moreover, this is especially true in science where the national teacher supply is critically low in physics, chemistry, and earth science. The net shortage for physics teachers is sixty- one percent, chemistry teachers is thirty- three percent, and earth science teachers is thirty- one percent (Hudson, 1996).

With the onset of high science teacher turnover rates, Sterling (2004) emphasizes that urban schools have a high occurrence of hiring science teachers that do not even have a minor in the field, or have licensed teachers teaching out of their field all together. According to Ingersoll (2001), the turnover rate of teachers is fifty percent higher in high-poverty schools than in low poverty schools. Research as indicated many reasons for this phenomena, however, an assessment of secondary principals' instructional leadership behaviors in recruiting, renewing, and retaining science teachers needs to be addressed.

Transformational principal leadership skills are the keys to improving the quality of science education that students receive in high- poverty urban schools. The No Child Left Behind Act (2004) calls for all schools to hire highly qualified teachers to work in the nation's schools. Secondary principals must be able to produce high levels of student achievement in science and hire highly- qualified science teachers. However, poor urban and rural schools face drastic shortages in trying to hire, retain, and recruit highly qualified science educators. Urban secondary principals have to be proactive in acquiring qualified science staff to work with their students.

### **Instructional Leadership**

Research on school improvement primarily involves the positive role of the principal on his respective campuses (Firestone & Wilson, 1985; Hallinger & Heck, 1998). Smith & Andrews (1989) define the role of instructional leadership as a provider of human resources, a provider of instructional resources, a communicator, and a visible presence in instructional activities. Glatthorn (2000) defines instructional leadership as "the exercise of those functions that enable school systems and their schools to achieve their goal of ensuring quality in what students learn." Strong instructional leadership by principals plays a key role in achieving educational excellence in their schools. This role solidifies the ideology that principals determine the overall effectiveness of their schools.

In turn, they help mold and change the type of thinking that occurs within a segment of society.

According to Rossow (1990), “the behaviors of principals, as authority figures, communicate what is valued to both teachers and students. Teachers and students tend to imitate the actions, attitudes, and beliefs of those in authority, such as the principal.” (pg. 34) School administrators need to be the most visible persons on campus. Glatthorn (2000) emphasizes the ideology of the role of strong instructional leadership and how it determines the nature and extent of curriculum integration by teachers. The instructional leader should analyze each teacher’s experience in developing, using integrated curricula, paying special attention to both successes and problems. Principals must take steps to achieve mutual accomplishments with their teachers by ensuring that resources are available in a timely manner, providing on-going staff development that is especially sensitive to teachers’ stages of concern, by helping teachers translate the district guide into long- term plans, making several informal observations, cheering the curriculum, and by analyzing test scores with teachers.

Sergiovanni (1991) defines the principal’s job as the person appointed to coordinate, direct, and support the work of others. (pg. 16) A successful school principal is one whose sole role is directed to improving teaching and learning for students (pg. 16). McEwan (2003) developed a list of ten traits that highly effective principals possess to evoke great success on their campuses. Highly effective principals are great communicators, educators, envisioners, facilitators, change master, culture builders, activators, producers, character builders, and contributors. Great school leaders have the capacity to connect with their stakeholders, are motivated by a sense of purpose based upon a vision for their organization, have strong human relations skills, are futuristic and realistic, and models what they mandate. They have energy and enthusiasm that is passed on to their staff and students, are results- oriented, are trustworthy and have great integrity, and are servant- leaders.

According to Northouse (2001), “leadership is a process whereby an individual influences a group of individuals to achieve a common goal.” (pg. 3) Since leadership is a large part of the influence, the idea of power comes into play. Every instructional leader within the school system has this type of power. “Power is the capacity or potential to influence. People have power when they have the ability to affect others’ beliefs, attitudes, and courses of action.” (pg. 6) This is the same level of influence and power that school level leaders have in schools in retaining, recruiting, and renewing quality science staff in urban schools.

As instructional leaders in high- poverty urban schools, principals are given the task to implement certain administrative support to science educators and keep them in the classroom. This role holds a lot of power and influence on science teachers working in urban schools. Ingersoll (2000) writes “there is a significant role for the management of schools in both the genesis of and solution to school staffing problems.” Data analyzed by Ingersoll in this same study suggests that administrators will have to decrease the demand for new teachers by lowering teacher turnover. Improvements can be done by administrators on many levels by creating a collegial working environment in the following manner: increasing support from school administrators, increasing salaries,

reducing school staffing problems, and by enhancing faculty input into school decision making.

### **Reasons for Dissatisfaction**

Based upon an article by Ingersoll (2000), teaching represents four percent of the entire nationwide workforce. The turnover rate for science teachers is sixteen percent that is higher than the fourteen percent of overall teacher turnover. Teachers are turning over in schools based upon several reasons: retirement, school staffing action, family or personal reasons, to pursue other jobs, and job dissatisfaction. Reasons for dissatisfaction are a plethora of concerns: poor salary, poor administrative support, student discipline problems, lack of faculty influence and autonomy, poor student motivation, poor opportunity for professional advancement, inadequate time to prepare, intrusions on teaching time, and class sizes too large.

### **Concluding Remarks**

In conclusion, the problem of hiring highly qualified science educators resides primarily upon the practices of principals. Mangrubang (2005) writes, “little attention has been given to the effort to retain the quality science teachers already hired- first year teachers as well as more experienced and seasoned ones.” Moreover, “school administrators, science teacher leaders, and teacher education programs can do a much better preparation of science teachers and to recruit new teachers into science teaching.” As instructional leaders, principals must utilize firm control at their urban campuses by developing a vision, setting attainable goals, maintaining strong discipline, cultivating a culture of excellence, and by evaluating results by recruiting, retaining, and renewing highly qualified science educators in urban schools. However, there is no mention in the research for an assessment procedure on how secondary principals working in urban schools are hiring, retaining, and renewing highly qualified science educators. As a result of this research, more information is needed to assess secondary principals’ instructional leadership behaviors working in high –poverty urban schools in their plight to renew and retain science educators.

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