



A Union of Professionals

Research on Improving School Safety: The Role of Technology and Reduced Class Size

Susan Friedfel
August, 1998

Increasing violence in America's schools is a monumental problem not only because it compromises the safety of students and teachers, but also because it can compromise education.

Between 1988 and 1995 there was a steady increase in the number of teachers who chose to leave the profession as a result of discipline problems. In 1989, 9.0% of former teachers left the profession due to student discipline problems; by 1995 that number rose to 17.9%. Similarly, the percentages of teachers that feel that the best way to encourage teachers to remain in the profession is to make schools safer and deal with student discipline more effectively have increased. In 1989, 7.3% of those who stayed in the same district, 9.2% of those who moved to another district and 10.3% of those who left the profession felt that improving student discipline and school safety would encourage teachers to continue to teach. By 1995, 16.0% of those who continued to teach in the same district, 16.7% of those who moved to another district, and 20.6% of those who left the profession felt this way. (US Dept. of Education 1997)

Unsafe After School Hours. Although the majority of teachers feel safe during the school day, many teachers, especially in urban school districts, feel vulnerable after school hours. As a result, they are less apt to offer to stay after school and give extra help or supervise extracurricular activities. (Futrell) Unfortunately, it appears that the teachers who have the highest risk of being the victim of violence are those who require strict adherence to high academic and behavioral standards. 38% of teachers and 57% of students felt that teachers who are considered strict are the most likely teachers to become the victim of a violent attack (Metropolitan Life, 1993). This increased risk dissuades teachers from reaching their own creative potential and from challenging their students to reach elevated standards. Furthermore, schools with high levels of violence and vandalism have a culture of disrespect. This translates into disruptive behavior in the classroom which is both discouraging for the teacher and the other students. Teachers are less inclined to go to school every day and to prepare well developed lesson plans (Futrell, 1996). Many students stay home from school because they fear being attacked (Brown et al, 1996). These high rates of absenteeism prevent students and teachers from reaching their potential.

There are a variety of different measures that have been proposed to reduce violence in our schools. In a 1993 National School Boards Association survey, districts reported the strategies that they employ to address crime and violence. The top five strategies indicated were suspension from school (78%), implementation of school conduct/disciplinary codes (76%), collaboration with other agencies (73%), expulsion (72%), and development of school board policies (71%); however, there is little evidence of the effectiveness of these programs (National School Boards Association, 1993).

Technology. Many schools are hiring security personnel and employing technology in their school security plans. Some schools have installed permanent metal detectors while others have opted for hand held wand metal detectors which are less expensive. Searching every student can be very time consuming; this has prompted many schools to do random searches. The metal detector acts as both a deterrent and a method of catching students who bring weapons to school. The effectiveness of metal detectors is questioned by many; the cost, manpower necessary, and time required preclude schools from securing every entrance. Furthermore, the likelihood is that any student who is determined to bring a weapon to school will find a way (Ascher, 1994). The most effective use of metal detectors is as a part of a well developed safety plan (Kongshem, 1992). Other technology used includes television cameras, panic alarms, and two way communication in the classroom (Brown et al., 1996, and Morley et al., 1996). While technology does help, many security specialists recommend developing a hot line for tips because they feel that the best way to detect weapons in the schools is through tips from students (National School Safety Center, 1989).

Change Student Antipathy. Some scholars recommend that, in conjunction with technological security measures, schools create new violence prevention curricula and attempt to change the students' mentality about violence (Protrow-Stith et al., 1996). Many districts are using conflict resolution curricula to teach students how to talk through their conflicts while others are employing anti-violence curricula. In addition, student apathy, boredom, and frustration are seen as causes of school violence. In response, districts have created alternative schools and theme oriented high schools in order to target students' interests. (Brown et al., 1996 and Cortines, 1996)

Discipline Code. Although experts may vary in their opinions of previously discussed strategies, most agree that it is crucial for a school district to develop a strict discipline code with clear punishments. Districts must take measures to ensure that students, parents, and teachers have a clear understanding of the code and that all adhere to the code. If students, parents, teachers and/or administrators don't respect the discipline code, it will be largely ineffective. Disciplinary actions for violent acts include suspension, expulsion, and referral to police. In addition, many schools are creating dress codes; some schools do not allow students to wear baggy pants in which weapons could be concealed. Other districts don't allow students to carry bags or restrict bag use to only those which are transparent. Clothing which represents gang affiliation is often restricted as well (National School Safety Center, 1989). While there are a plethora of methods from which to choose, the effectiveness of these different methods varies from school to school (McCune, 1994). There is no one method that will prevent all of the violence in a school, but rather, schools must combine several of these different strategies to find the right combination.

Small Class Size and Safety. In addition to the aforementioned strategies, analysts have considered class size reduction as a method to reduce the levels of violence in the schools. The 1978 Safe School Study Report to the Congress: Violence Schools -Safe Schools indicated that larger schools report higher incidences of violence and that there is a relationship between smaller class size and lower levels of violence and vandalism. In an overcrowded school, students may feel anonymous, that no one knows them or cares about them and that if they are violent they will not be caught or punished. Similarly, overcrowded classrooms make it difficult for teachers to maintain control and also reduce the opportunity for teachers to form personal relationships with students (Kadel et al., 1993). Smaller schools and smaller classes allow teachers to form supportive personal relationships with students, eliminating anonymity. Small classes also enable teachers to teach students the values that they may not be learning at home (Cortines, 1996). "Indeed, many educators are convinced that, without

reducing class size, all other attempts to ensure school safety can at best offer marginal improvement" (Ascher, 1994).

Small Class Size and Achievement. Not only do small classes reduce violence levels in the school but they also provide achievement gains. In 1978, Glass and Smith concluded that achievement decreased as you added students to very small classes. They also noted that decreasing class size from 40 to 20 students creates a 6 percentile increase on an average achievement test. Similarly, the STAR study in Tennessee found that small classes (average student teacher ratio of 15:1) had higher achievement levels than did regular classes (average student teacher ratio of 24:1) and regular classes with a full time teacher aide. In each year of the study (1985-89) the small class effect was statistically significant for kindergarten through third grade. Furthermore, the Lasting Benefits Study showed that fourth graders in regular classes who had been in small size STAR classes in prior years had a statistically significant advantage over those who had been in regular classes (Achilles et al., 1992).

Other studies have had similar findings. The class size reduction evaluation in the San Juan Unified School District, found that after one year of 20 student English classes the median percentile in reading comprehension for all students in the district increased from 67 to 73 (Housden, 1992). While Mitchell & Beach's findings don't contradict past research, they do assert that the benefits of small class size are not realized when teaching techniques do not change to realize the potential of the smaller class. They conclude that teacher time and attention is a "fixed instructional resource" which is best utilized in a small class (Mitchell et al, 1992). An evaluation of the PRIMETIME program in the North Gibson School Corporation, found that there was a positive statistically significant impact on achievement in both math and reading in grades 1 and 2, but that these gains eroded in grade 3 (Gilman et. al, 1988). One of the possible explanations for this erosion is that third grade teachers failed to adjust their teaching style in order to realize the potential benefits of smaller class size.

In contrast to many of his colleagues, Allan Odden asserts that the only way for class size reduction to have a significant positive impact on student achievement is to reduce class size to a tutoring level of 1-3 students. Acknowledging that this is implausible, Odden recommends that reading classes be reduced to 15 in grades K-3 and that tutoring be provided for those performing below grade level (Odden, 1990). Helen Ladd and Ronald Ferguson studied student achievement in the Alabama public schools. They found that the standardized test scores in mathematics of students in classes of 19 or less were .14 standard deviations higher than those of students in classes of 30 or more. There were similar findings in reading where smaller classes yielded scores .05 standard deviations higher than those in larger classes (Ferguson, 1996).

In their meta-analysis, Robinson and Wittebols found that of 22 studies of K-3, eleven found reducing class size had a positive effect on achievement in reading. Two found in favor of larger classes and nine found that there was no significant difference between performance in large and small classes. In addition, they found that of 21 studies of grades 4-8, 8 found performance higher in smaller classes, 3 found in favor of larger classes, and 10 found no significant difference. By subject area, 5 of 14 studies involving reading found that achievement was higher in smaller classes and 6 of 15 studies in math found higher achievement in smaller classes. Two of 7 studies in English found gains in achievement in smaller classes; one found higher achievement in larger classes and four found no significant difference. In contrast, Hanushek asserts that teacher-student ratio is not "systematically linked to student performance." He found that of 277 studies 15% showed a positive statistically significant relationship between teacher pupil ratio and student achievement.

13% showed a negative statistically significant relationship. 27% showed a positive though not statistically significant relationship. 25% showed a negative statistically insignificant and 20% showed an unknown statistically insignificant relationship.

While previously discussed studies addressed class size in terms of either safety or achievement, Harold Wenglinsky linked class size to both safety and achievement. He found that lowering student teacher ratios had a significant effect on student achievement in both the fourth and the eighth grade. Wenglinsky measured the school social environment in terms of both teacher and student involvement. Teacher involvement was indicated by absenteeism, control over instruction, and control over course content; student involvement was indicated by tardiness, absenteeism, class cutting, and regard for school property. He found that problems in the social environment of the eighth grade far exceeded those in the fourth grade.

Wenglinsky asserts that decreasing the student-teacher ratio in the fourth grade has a direct effect on student achievement. He found that fourth graders in smaller than average classes were a half a year ahead of fourth graders in larger than average classes. He concludes that reducing student teacher ratios in the fourth grade has a direct educational effect on student achievement. However, in the eighth grade, Wenglinsky found that reducing student teacher ratios produced a significant positive effect on the social environment (a .477 point difference in the social environment scale). This improved social environment is far more conducive to learning and thus results in student achievement gains in mathematics. Wenglinsky claims that smaller teacher student ratios allow teachers to give more individual attention to students and allow students to form a social cohesion amongst themselves (Wenglinsky).

Citations

Achilles, C.M., Jayne Boyd-Zaharias, B. DeWayne Fulton, Barbara A. Nye, & Mark P. Wallenhorst. (1992). Five Years of Small Class Research: Student Benefits Derived from Reduced Student/Teacher Ratios. Lasting Benefits Study Class-Size Update for Educational Practitioners and Researchers (Research Report No. 1(R). Tennessee State University. (ERIC Document Reproduction Service No. ED 344 344).

Ascher, Carol. 1994. Gaining Control of Violence in the Schools: A View from the Field. ERIC Digest No. 100. ERIC Clearinghouse on Urban Education, New York, NY; National Education Association, Washington, DC. Center for the Revitalization of Urban Education. (ERIC Document Reproduction Service No. ED 377 256).

Brown, John A., Robert C. Brown, & Bruce R. Ledford. (1996). Using Technology to Reduce Public School Violence International Journal of Instructional Media Vol. 23(2). (pp. 131-135).

Cortines, Ramon C. (1996). The New York City Board of Education and Violence Prevention. Allan M. Hoffman (Ed.) Schools, Violence, and Society (pp. 265-274). Westport, CT: Praeger Publishers.

Ferguson, Ronald F. and Helen F. Ladd. (1996) How and Why Money Matters: An Analysis of Alabama Schools. Helen F. Ladd (Ed.) Holding Schools Accountable. (pp. 265-298). Washington, DC: The Brookings Institution.

Futrell, Mary Hatwood. (1996). Violence in the Classroom: A Teacher's Perspective. Allan M. Hoffman (Ed.). Schools, Violence, and Society (pp. 3-19). Westport, CT: Praeger Publishers.

Gilman, David, Heather Harder, & Christopher Tillitski. (May, 1988). Why State Sponsored Reduced Class Size Programs Aren't Working. Indiana State University. (ERIC Document Reproduction Service No. ED 313 115).

Glass, G.V. & M.L. Smith. (1979). Meta-analysis of Research on Class Size and Achievement. Education Evaluation & Policy Analysis Vol. 1(1) (pp. 2-16).

Hanushek, Eric. (1996). School Resources and Student Performance. Gary Burtless(Ed.). Does Money Matter? The Effect of School Resources on Student Achievement and Adult Success (pp. 43-73). Washington, DC: The Brookings Institution.

Housden, Theresa, Ed. D. (April, 1992). Class Size Reduction Evaluation Freshmen English, Spring 1991. San Juan Unified School District. Carmichael, CA. (ERIC Document Reproduction Service No. ED 344 239).

Johnson, Jean. (1995). Assignment Incomplete: The Unfinished Business of Education Reform. Public Agenda.

Kadel, S. & J. Follman. (March, 1993). Reducing School Violence. South Eastern Regional Vision for Education (SERVE).

Kongshem, Lars. (June, 1992). Securing Your Schools, Are metal detectors the answer? Executive Educator (pp. 30-31).

McCune, Tim. (1994). School Violence and Technology. Updating School Board Policies Vol. 25 (5)(pp. 1-3). National School Boards Association. Alexandria, VA.

Metropolitan Life. The American Teacher, 1993: Violence in America's Public Schools. New York: Louis Harris and Associates.

Mitchell, Douglas E. and Sara Ann Beach. (1990). How Changing Class Size Affects Classroom and Students. Far West Laboratory for Educational Research and Development, Policy Briefs Number 12(pp. 1-4). San Francisco, CA. (ERIC Document Reproduction Service No. ED 358 077).

Morley, Elaine & Shelli B. Rossman. (1996). Introduction. Education and Urban Society, Vol. 28(4)(pp. 395-411). Sage Publications.

National Institute of Education. (January, 1978) Violent Schools-Safe Schools: The Safe School Study Report to the Congress Washington, DC.

National School Boards Association. (1993). Violence in our schools: How America's School boards are safeguarding our children. Alexandria, VA: Author.

National School Safety Center. (1989). Weapons in Schools, NSSC Resource Paper. Pepperdine University. Malibu, CA: Author.

Odden, Allan. (1990). Class Size and Student Achievement: Research-Based Policy Alternatives. Educational Evaluation and Policy Analysis Vol. 12(2) (pp. 213-227).

Prothrow-Stith, Deborah and Sher Quaday. (1996). Communities, Schools, and Violence. Allan M. Hoffman (Ed.). Schools, Violence, and Society (pp. 153-162).

Robinson, Glen E. (1990). Synthesis of Research on the Effects of Class Size. Educational Leadership Vol. 47(7) (pp. 80-90).

U.S. Department of Education. National Center for Education Statistics. Characteristics of Stayers, Movers, and Leavers: Results from the Teacher Followup Survey: 1994-1995, NCES 97-450, by Summer D. Whitener, Kerry Gruber, Heidi Lunch, Kate Tingoes, Mia Perona, Sharon Fondelier. Project Officer: Summer D. Whitener. Washington, DC: 1997. (Pp. 15 & 17).

Wenglinsky, Harold. A Policy Information Perspective, When Money Matters. Educational Testing Service. Princeton, NJ.