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BRIEFING



The Impact of Educational Quality on the Community

A Literature Review

Stephen J. Carroll, Ethan Scherer



RAND EDUCATION

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PREFACE

A group of Santa Monica community leaders and leaders of the Santa Monica-Malibu Unified School District (SMMUSD) asked RAND to summarize what existing policy studies had found about the impact of educational quality on a community. In response to their request, RAND conducted a review of the available literature. This briefing reports what we found in the course of that review.

The briefing was given to an audience of policymakers from the SMMUSD and city officials on February 6, 2008. This documented briefing came from the transcribed presentation, but has been altered to insert information that was not provided during the actual presentation, such as citations. It should be of interest to other city governments and public education school districts.

The work reported here was cosponsored by the Office of the President of RAND and RAND Education.

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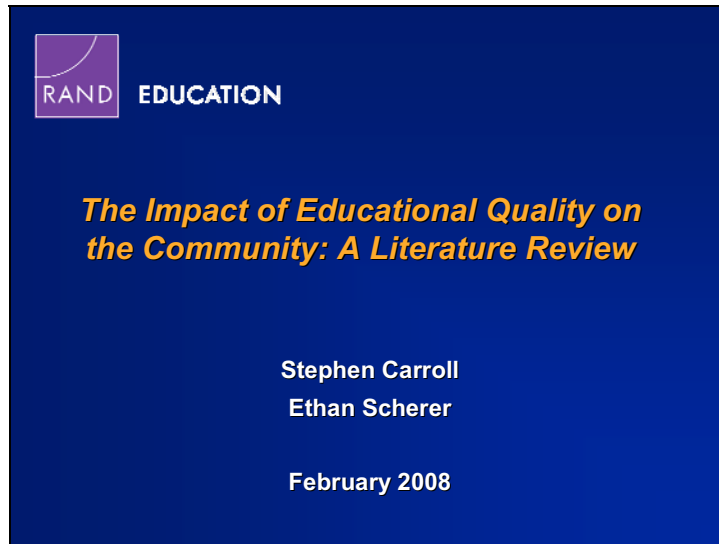
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Stephen Carroll and Ethan Scherer prepared this briefing at the request of the Santa Monica-Malibu Unified School district, which was interested in identifying the contribution of the public K–12 education system to the Santa Monica-Malibu community.

The briefing was presented to members of the district’s school board, the superintendent, and members of her cabinet, as well as other city officials on February 6, 2008, at RAND. This document is derived from a transcription of the briefing, but with some small changes made. For example, the briefing as given did not contain citations. The authors have inserted the citations in this documented briefing to help the reader locate important literature.

Study Purpose

- Synthesize what empirical research demonstrates about the effects of educational quality on the community
 - Focus on results that apply to SMMUSD
 - Exclude low-quality studies, questionable findings
- Scope does not include research on how to improve quality or the costs of doing so

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This briefing synthesizes the empirical research on the effects of educational quality on the community. First, please note the word “empirical.” RAND reviewed *empirical* studies—studies in which some evidence was offered in support of the arguments. In the course of the literature review, we ran across books and articles in which the authors put forth logical arguments about the relationship between educational quality and the community, but did not offer any empirical evidence in support of those arguments. We do not suggest that these arguments are wrong, but we did not include them in this review because no evidence was offered in support of them.

This briefing focuses on results reported in the literature that apply to K–12 education, public and private. In our review, we generally did not consider studies that examined the effects of educational quality in either post-secondary education or early childhood education on the community.

We excluded studies that we considered of low quality, either because the methodology or the data were inadequate and which, therefore, reported findings that we thought were not well supported by empirical evidence. We also excluded studies that reported findings not adequately supported by the analysis, even if the study used accepted methodologies and substantial data.

Also, our review did not include research on how to improve quality or the cost of doing so. We looked at how educational quality affected the community, but not at what might be done to improve quality, or what that might cost. Accordingly, the scope of this

briefing is limited to what the available research shows about the effects of educational quality on the community.

Scope of Study

- Reviewed about 150 books and articles, of which at least 10 reviewed relevant literature
- Selected about 40 for detailed analysis
- Mainly educational policy, but some economics, urban policy, health/medical
- Most 1990s, earliest 1959, most recent 2007

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In the course of our effort, we reviewed roughly 150 books and articles. At least ten of these were themselves literature reviews that considered the findings reported in numerous studies. We were able to find a substantial volume of research on the effects of educational quality on the community.

We found roughly 40 studies that we thought were particularly relevant. We paid particular attention to these studies in our review, and most of this briefing is based on the findings reported in these studies.

Most of the work was published in the area of educational policy. But, we found studies in economics and urban policy areas and, rather surprisingly—to us at least—a rather large amount of literature in the health and medical arenas on the effects of educational quality on health.

Most of the work was published in the 1990s. The earliest goes back to 1959. We included two studies that were published earlier this year (2007). In drawing together our findings, we generally placed greater weight on the results of more recent studies. Most of the findings I'll be reporting today are based on fairly recent work.

Limitations of the Research

- No studies specific to SMMUSD but findings generally apply
 - Results specific to SMMUSD would require additional work
- Studies generally identify correlations, not causal connections
- Interactions with “outside” communities can be important in SMMUSD environment

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This literature has some limitations.

First, none of the studies we found reported specifically on SMMUSD or the Santa Monica and Malibu communities. We report findings from the literature that describe school districts like SMMUSD and their effects on the communities they serve. We believe that these findings generally describe the effects that SMMUSD probably has on its community. But the specific numerical findings reported in any one study may not apply directly to Santa Monica and Malibu. In other words, we can identify patterns and relationships reported in the literature, but we can't derive specific quantitative impacts of educational quality on the Santa Monica and Malibu communities.

We could replicate some of the studies reported in the literature in Santa Monica and Malibu and thereby develop specific results for these communities. But that would require additional work beyond a literature review.

The studies we used are generally quasi-experimental in nature; they identify correlations or relationships between educational quality and specific outcomes. They very seldom identify causal connections. For example, some studies demonstrate that the quality of an individual's education is associated with the quality of his or her physical health. But why that should occur is not clear. Is it because higher educational quality leads to higher income, which, in turn, leads to better health care? Or, does higher educational quality lead people to pay more attention to their health? (For example, higher educational quality may result in people reading more about how to care for their health.) The research reported in the literature clearly demonstrates that better health

follows improved educational quality results on average, but it does not explain exactly why that occurs. And that's true about most of the relationships we'll be talking about today.

Finally, we have to note that what might be loosely called "interactions with the outside communities" are very important in understanding the impact of educational quality on the Santa Monica-Malibu community. Santa Monica and Malibu are embedded in a very large metropolitan area. Individuals interact with that area in a variety of ways. For example, students who go through SMMUSD may move out of the area after they finish school. Even if they continue to live in the Santa Monica-Malibu area, they may work outside the area. The quality of their education may affect the larger community in which they work but not directly affect the community in which they were educated. Similarly, some of the crime that is committed in Santa Monica and Malibu is committed by people who live and went to school outside of the area and whose behavior was not affected by the quality of the education provided by SMMUSD. In other words, we must be aware of the fact that we don't have hard, firm boundaries around the community. The community is affected by things that go on outside it. Things that go on inside the community affect the outside world but are not necessarily directly reflected in the community itself, at least not entirely.

Measures of Educational Quality

- **Kinds of measures**
 - Academic achievement (e.g., test scores)
 - Level of education (e.g., high school graduation)
 - May be secondary effect of academic achievement
- **Scope of measures**
 - Individual
 - School or district average

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With that by way of introduction, let's turn to what the literature says. First of all, the research literature basically uses two kinds of measures of educational quality. Some of the work focuses on **academic achievement**. In these studies, educational quality, as measured, for example, by test scores, refers to how well students are taught or how much students know as a result of their education. Other studies focus on the **level of education**. In these studies, quality, as measured, for example, by the high school drop-out rate or the fraction of students who go on to college after high school, refers to the level of education attained by the students served by the schools.

Some of the literature suggests that the level of educational attainment is itself a secondary effect of academic achievement. That is, if schools do a better job of teaching their students, then the students are more likely to complete high school, more likely to go on to college, and so forth. So these two measures are not entirely independent; they are interrelated.

Studies look at these measures at two levels. Some studies focus on the **individual**. What difference does it make if a student's test score is higher or if the student completes high school rather than dropping out? In either case, we are interested in whether the quality of an individual's education affects the community. Others look at **school or district averages**. Here we are interested in whether the average quality of the education provided by the school or the district makes a difference to the community.

All four measures, both kinds and both levels, appear in the literature.

<i>Types of Impacts Addressed in the Literature</i>	
Individual	<ul style="list-style-type: none">• Employment and earnings• Physical and mental health
Local Community	<ul style="list-style-type: none">• Housing values• Crime rates• Tax revenues• Civic participation
Larger Community	<ul style="list-style-type: none">• Economic contributions

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The types of impacts examined in the research on the effects of educational quality on the community generally fall into three broad categories.

First, at the individual level there is a lot of research on how educational quality affects an *individual's employment and earnings* and a fair amount on how educational quality affects an *individual's physical and mental health*. While we were asked to look at how educational quality affects the community, individuals are members of the community, their families are members of the community, and their friends are members of the community. So if educational quality improves an individual's economic well-being or physical and mental health, then that improves the community in which that individual lives.

Second, a number of studies look at the effects of educational quality on aspects of the local community. The four kinds of impacts most studied are *housing values*, *crime rates*, *tax revenues* (particularly property taxes but also some other kinds of taxes as well), and *civic participation*. For example, studies examine the association between educational quality in a school district and the value of housing in the area served by that school district. Other studies examine the relationship between educational quality in a school district and crime rates in the area served by that school district. As these are the kinds of effects most directly related to the request posed to us, we put most of our time and effort into finding and reviewing studies that examined the impacts of educational quality at this level.

Finally, the Santa Monica-Malibu community is part of larger communities. It is a part of the Los Angeles Metropolitan Area, part of the State of California, and part of the United States. SMMUSD may have effects on those larger communities. These effects might be a small, because Santa Monica-Malibu is only a small part of those larger communities, but the effects could nonetheless be important.

Some Important Impacts Have Not Been Empirically Addressed

- Effects of educational quality on
 - Social cohesion/community spirit
 - Environmental awareness/concern

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We were not able to find any empirical studies of some kinds of impacts that are occasionally discussed in the literature. In particular, we found numerous articles that suggest that educational quality has a positive impact on social cohesion and community spirit. There are also discussions in the literature on whether educational quality has an impact on environmental awareness and concern and, consequently, treatment of and care for the environment.

We will not address these here simply because we did not find any empirical research that addressed these issues. This omission does not mean that educational quality does not affect these areas. Rather, we do not discuss these areas, and others, because we did not find any solid empirical evidence of an effect and, consequently, did not include them in the literature review presented here.

Overview

- **Effects on the individual**
- Effects on the local community
- Effects on the larger community

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Let's start by looking at the effects of educational quality on the individual.

***Strong Evidence of Effects on
Employment and Earnings***

Increased individual achievement/education level →
increased employment and earnings

- Higher likelihood of employment
- Higher wages when employed

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There is very strong evidence that educational quality affects employment and earnings. There are many powerful, well-done studies that show that increased individual achievement or individual education level affects the individual's employment and earnings. Researchers have consistently found that people who are better educated, either in the sense of higher test scores (they've learned more) or in the sense of educational attainment (they've achieved a higher level of education), tend to have a much higher likelihood of employment and, when employed, much higher wages (Card, 1999; Ashenfelter, Harmon, and Oosterbeek, 1999; Krueger and Lindahl, 2001; Rouse, 2005). So people do much better economically as the quality of their education improves.

Strong Evidence of Effect on Physical and Mental Health

Increased individual education level → improved health

- Reduced disease rates (kidney, cardiovascular, high blood pressure, cancer)
- Reduced destructive habits (smoking, drinking, drug use)
- Increased positive activities (e.g., exercise)

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There is also strong evidence from many studies of the positive association between an individual's educational quality and later physical and mental health. Most of the studies in this area measure educational quality by educational level; they generally don't consider test scores or other measures of achievement. They find that people that are better educated in that sense have improved health along a variety of dimensions (Groot and van den Brink, 2007). There are several studies that show that higher levels of education are related to reduced disease rates, particularly kidney disease, cardiovascular disease, high blood pressure, and cancer (Berger and Leigh, 1989; Wong et al., 2002; Auld and Sidhu, 2005; Lleras-Muney, 2005). There are also studies that show higher educational attainment is associated with reduced engagement in destructive habits, such as smoking, drinking, and drug use, and with increased engagement in positive activities, such as exercise (Kenkel, 1991; De Walque, 2004). So there is significant evidence that increased educational attainment by an individual is associated with improved health outcomes for that person.

Overview

- Effects on the individual
- **Effects on the local community**
- Effects on the larger community

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Now let's turn to the local community.

**Strong Evidence of Effects on
Housing Values**

- 1% increase in average school/district reading or math scores → 0.5 to 1% increase in property values
 - Increases average house values throughout school attendance area/district
 - Secondary effect: increases property tax revenues

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There is very powerful evidence that the quality of a school or a school district, as measured by average test scores, is positively associated with housing values. Researchers posit that homeowners are willing to pay more to live in a community that is served by a school or a school district that is higher quality, as measured by the average performance of the students attending that school.

Specifically, studies have found that 1 percent higher average reading or math scores in Chicago and Massachusetts were associated with .5 to 1 percent higher property values (Black, 1999; Downes and Zabel, 2002). That means that all the housing values in the area served by the school or school district are improved. That has a profound secondary effect. In California, we don't reassess houses routinely, because of Proposition 13; houses are reassessed when they sell. If they sell for higher values, then they are reassessed at higher values. This means property tax revenues, and income to the city coffers, increase, making the community better off.

To offer a very rough—please note, very rough—perspective on this, the median home sold in Santa Monica in 2006, the most recent year for which I could find data,

sold for almost \$900,000.¹ Students' test scores in SMMUSD, depending on which particular test is used, run roughly 10 to 13 percent better than the statewide average or the Los Angeles Unified School District average.² Using the results from the literature implies that a 10–13 percent higher quality of schooling, as measured by the standardized California test, applied to a \$900,000 median priced home, results in somewhere between roughly \$50,000 and \$100,000 additional value per home, for every home in Santa Monica.

While we don't know that those numbers apply directly to Santa Monica, we believe the relationship applies. We offer them only to provide a sense of the possible magnitude of the effect of educational quality on housing values.

¹ City Data, "Santa Monica, CA," <http://www.city-data.com/city/Santa-Monica-California.html> (accessed on January 20, 2008).

² <http://data1.cde.ca.gov/dataquest/Distrpt.asp?cSelect=1964980--SANTA+MONICA-MALIBU+UNIFIED&cChoice=EthOnly&cYear=2005-06&cLevel=District&cTopic=Dropouts&myTimeFrame=S&submit1=Submit>

<http://data1.cde.ca.gov/dataquest/Distrpt.asp?cSelect=1964733--LOS+ANGELES+UNIFIED&cChoice=EthOnly&cYear=2005-06&cLevel=District&cTopic=Dropouts&myTimeFrame=S&submit1=Submit>

**Strong Evidence of Effects on
Crime Rates**

- A 1-year increase in average education level → substantial reductions in major crimes
 - 27% fewer murders
 - 30% fewer assaults
 - 20% fewer motor vehicle thefts
 - 13% fewer arson cases
 - Single-digit percentage reductions in other major crime categories

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There is strong evidence that higher educational quality is associated with lower crime rates. Studies looking at FBI categories of major crime rates have found that a one-year higher average educational level in a community is associated, on average, with substantially lower crime rates in all categories of major crimes (Lochner and Moretti, 2004). In four of the categories—murders, assaults, motor vehicle thefts, and arson cases—the percentage reductions are double-digit: A one-year higher average educational level in a community is associated with a 13–27 percent lower rate at which those crimes are committed. There are several other categories of major crimes for which we see single-digit percentage reductions. I haven't listed them all here.

This is one of the areas in which the tangled relationship between Santa Monica and the larger community is particularly problematic in terms of understanding the implications of the research. Improvements in the quality of education in Santa Monica and Malibu mean that, on average, students going through those schools are less likely to commit crimes. But some of that reduction will spill over into less crime in Venice and Culver City, et cetera. Similarly, some of the crime committed in Santa Monica and Malibu is committed by people who live outside the community and, consequently, aren't affected by the quality of education in the Santa Monica-Malibu Unified schools. So we do have strong evidence that improving educational attainment is associated with reduced crime. However, it does not translate into a predictable reduction in a particular community, given the spillage from one community to another. While the connection

between the reduction of crime in the local community and the local schools is there, the actual reduction depends on factors in the surrounding community as well.

**Strong Evidence of Effects on
Tax Revenues**

- Increased education level (individual and school average) → higher tax revenues
 - Higher housing values → higher property tax revenues
 - Higher earnings → greater local sales
 - Greater sales tax revenues
 - Higher business property values → higher property tax revenues

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There's also strong evidence that educational quality affects tax revenues. As we mentioned before, the research finds that increased average educational level leads to higher tax revenues. In particular, increased average educational attainment leads to higher housing values, which leads to higher property tax revenues.

Increased educational level also leads to higher earnings (Ashenfelter, Harmon, and Oosterbeek, 1999; Card, 1999; Krueger and Lindahl, 2001; Rouse, 2005). If people earn more, then they probably spend more. Their increased spending will not all be concentrated in the immediate community. People living in Santa Monica will occasionally buy a suit in Westwood or go to Venice for dinner. But they will also spend more shopping on 3rd Street, Wilshire, or Montana in Santa Monica. If people earn more and, consequently, spend more in Santa Monica, sales tax revenues for the cities of Santa Monica and Malibu will increase. Increased local spending can also make business property in the community worth more. This leads to higher business property values, which in turn lead to higher property tax revenues from businesses as well as higher property tax revenues from residences.

***Some Evidence of Effects on
Civic Participation***

Increased individual education level → increased civic participation

- **Increased voter participation**
- **Increased acceptance of free speech**
- **Increased participation in community arts, music, drama, and cultural events**
- **Increased newspaper readership**

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A limited number of studies find that educational quality, as measured by the average level of education in a community, is associated with increased civic participation. Although this topic has not received much attention, studies have found that, on average:

- Educational quality is related to voter participation. Better-educated people are more likely to participate in elections (Milligan, Moretti, and Oreopoulos, 2004).
- Educational quality is related to increased acceptance of free speech and democratic movements, increased tolerance for alternative points of view, et cetera (Milligan, Moretti, and Oreopoulos, 2004; Dee, 2004).
- Educational quality is related to increased participation in community arts, music, drama, and cultural events of all sorts (DiMaggio and Useem, 1980; McCarthy, Ondaatje, and Zakaras, 2001; NEA Surveys of Public Participation in the Arts, various years).
- Educational quality is related to increased newspaper readership (Dee, 2004).

Overview

- Effects on the individual
- Effects on the local community
- **Effects on the larger community**

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Let's turn to the larger community.

Strong Evidence of Economic Effects

Increased individual achievement/education level → higher earnings

- Higher income, sales, and property taxes
- Higher contributions to social support programs
- Lower rates of participation in social welfare programs and lower costs when participating
- Greater productivity and competitiveness, greater economic growth

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We've already noted that increased individual achievement and individual educational level leads to higher earnings.

If people earn more, they pay more in taxes: income taxes, sales taxes, and property taxes (Belfield and Levin, 2007; Erkut and Carroll, forthcoming; Krop, 1998; Rouse, 2005). Some of those sales and property taxes go directly to the community. Income taxes are paid to the state and to the county, but that improves the larger community within which a city is located.

Higher earnings also lead to higher contributions to social support programs: more payments into Social Security, more payments into Medicare, et cetera (Belfield and Levin, 2007; Erkut and Carroll, forthcoming; Krop, 1998; Rouse, 2005).

Educational quality and the consequent higher earning result in lower rates of participation in welfare programs and lower draws on those programs by those who participate (Belfield and Levin, 2007; Erkut and Carroll, forthcoming; Krop, 1998; Rouse, 2005)

Finally, in general, educational quality contributes to greater productivity and competitiveness, leading to greater economic growth (Committee for Economic Development, 2005; Moretti, 2004; National Center for Public Policy and Higher Education, 2008; Shapiro, 2006).

SMMUSD Educational Quality Has Made Significant Contributions to the Community

Individual	<ul style="list-style-type: none">• Improved residents' income and employment• Improved physical and mental health
Local Community	<ul style="list-style-type: none">• Improved housing values• Reduced crime rates• Increased tax revenues• Increased civic participation
Larger Community	<ul style="list-style-type: none">• Increased economic growth• Increased contributions to (and lower participation in) social support programs

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Applying this literature review to SMMUSD, it is likely that SMMUSD's educational quality has made significant contributions to the community. At the individual level, the quality of education offered here has likely improved residents' income and employment, leading to improved earnings and improved physical and mental health. At the level of the local community, the quality of education offered here probably has led to improved housing values and reduced crime rates, increased tax revenues, and increased civic participation. And finally, at the level of the larger community in which Santa Monica and Malibu are located, the educational quality probably contributes to increased contributions and reduced participation in social support programs.

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