

From Burdens To Benefits: The Societal Impact Of PDL-Enriched, Efficacy-Enhanced Educators

Steven H. Shaha, Ph.D., DBA, University of Utah, USA

Kelly F. Glassett, Ph.D., University of Utah, USA

David Rosenlund, MBA, O.C. Tanner Company, USA

Aimee Copas, Ph.D., Executive Director for the ND Council of Educational Leaders, USA

T. Lisa Huddleston, MA, Principal, Livingston County Middle School, USA


ABSTRACT

Societies continue to absorb increased burdens in cost for helping citizens unable to achieve at optimal levels. Building on past research, we project educational benefits to offset current societal burdens through enhanced educator capabilities. Studies reviewed show participation in a high-impact professional development and learning solution resulted in improved student performance and reduced dropout rates, reduced disciplinary rates and increased rates for college-bound, along with lower teacher turnover. Computations show that generalization of such impacts should trade societal burdens for benefits at between \$3.7 billion and \$6.9 billion within the first year. Cumulatively within 20 years the burdens converted to benefits are projected to exceed \$85 billion. Enhanced educator capabilities will substantively reduce needs and costs for societal programs, replaced with tangible benefits to all.

Keywords: Social Burdens; Professional Development; Student Performance

INTRODUCTION

Society's Challenge

ocieties throughout history have lauded education as a basic fundamental for improved individuals and their collective societies (Counts, 1945; Rose, 1995). Education enables people individually and collectively to be more successful, and government-provided public education has become a right and entitlement in most Western societies (Bowles & Gintis, 1976). Each of us remembers warmly the impact good educational experiences provided for us, to enable us to become who we are.

Despite massive expenditures and sustainment of education, however, the burdens on society for sustaining challenges from suboptimal citizen outcomes continue to rise (Hacker, 2002). The societal burdens of dependency on welfare and other governmental assistance programs continues to rise in the United States, as throughout the world (Gore, 1993; Murray, 2009). Thus with the availability of education that works well for many, the costs of assisting struggling citizens remains a challenge (Gore, 1993). It seems perplexing how educational agencies spend ever-much on methods and programs, yet the return on investment in lower expenses for citizen support remains unrealized (Bembry, et.al., 1998).

Costly Burdens

Two concerns, therefore, weigh on current leaders and societies. First, the rising and reportedly oppressive burdens associated with supporting members of society unable to meet their own needs (Rodger, 2000; Sefton, 2003). Governments and civic leaders consistently seek ways to resolve challenges faced throughout constituencies and populations they serve, many with long histories of need and struggle (The White House, 2014). Societies and their

leaders seek the capability to help individuals succeed with better employment and high enjoyment (Boycko, M, 1992; Paul & Murdoch, 2000; SandraDanziger, 2000), *and* concurrently reduce reliance on public support for basic needs (c.f. Amir, 1995; Lichter & Jayakody, 2002; Pigou, 2013). Helping those that need help remains paramount (Batson, et.al., 2007), but equally or more important is to reduce the needs for cost-consuming help among citizens altogether (Gawande, 2009; Huber & Stephens, 2001; McVay, et.al., 2004; Sharkansky, 1971; Wholey, 1979).

An Impactful Solution Needed

The value of supporting and helping those in need is not in question, but cost-related burdens are recognizably higher among uneducated or poorly educated sectors of the population and society (c.f. Michael & Coelli, 2004). Resolution to societal challenges has been associated with more impactful education (Behrman & Stacey, 1997; Wolfe & Haveman, 2002). Citizens with better educations show greater personal assets toward improved contributions to their own well-being and those of the society (Chetty, et.al., 2011; Rowley & Hurtado, 2002; Vila, 2000).

Studies have shown that education improves individual lives and their societies collectively, and high-impact education results in benefits for all (Ankomah, et.al, 2005; Behrman & Stacey, 1997; Costa, 1991; McMahon, 2000; Straton, 1990; Weisbrod, 1964). Improved education has been associated with lower rates for crime and incarceration, and better overall well-being throughout life (Arendt, 2005; Cutler & Lleras-Muney, 2006; Lochner 2004, 2011; Lochner & Moretti, 2001; Parker, et.al., 2003; Usher, 1997). Even the recipients of social support share desires to replace social reliance with personal determination (Seccombe, 2007).

Therefore, the second concern is whether there are results-proven, cost-effective and execution-ready solutions available for remediating or calming growing reliance on social support for personal survival among so many (Axinn & Stern, 2011). As the expenditures on education have increased, it seems the burdens on society should decrease. As the burdens to societies continue to rise, further research is needed to guide toward higher benefits from all educational solutions. Our society needs approaches to maximizing the impact and benefit of education.

What could the cumulative benefits be of higher impact education to offset the burdens already sustained? Such summarizes the intent of this research, urgently overdue. We seek to ascertain is the impact of achievable reductions in costly societal burdens offset or overcome through benefits enabled through improved educational efficacy.

Maximized Education and Educators as a Solution

Again, we do not question the value of the current educational systems and, like those reading this, we remember well the debts we owe to the education we received. What is needed is a system that enhances and maximizes educator capability to help people better succeed and reduce the growing needs and costs of societal programs – burdens. Further, it is needed for active educators within current educational programs, readily enabling to raise student achievement and empower their success-oriented capabilities.

No one would be so bold as to claim that high-impact educators are the solution to societal challenges. But, can current burdens to society be reduced, offset or replaced by benefits to citizens achieved through improved, more impactful and enhanced educators, thereby trading burdens for benefits back to the societies?

Continuous Educator Improvement

Specifically, of interest in this research is maximizing the impact of efforts and expenditures on professional development and professional learning for educators (PDL). PDL represents educationally-focused programs whose legitimate and appropriate aim is to optimize continuous improvement for active teachers and educators. Ongoing and justifiable PDL should prove its value through heightened educator impact, measured in higher student achievements and reduced rates for negative occurrences in the educational system and its outcomes. While PDL offerings are plentiful, few provide substantive evidence of favorable impacts on students, the educators who serve them, or the societies to which they belong (Shaha & Ellsworth, 2013a, 2013b).

A series of multi-State studies of a PDL approach quantified noteworthy improvements to student ability and performance, and in other measures of educational benefit (Shaha & Ellsworth, 2013a, 2013b, 2014a, 2014b; Shaha & Glassett, 2015; Shaha, et.al, 2015; Shaha, Glassett & Copas, 2015a, 2015b; Shaha, Glassett & Ellsworth, 2015a, 2015b). One study, for example, showed that small investments in PDL experiences for every-day teachers converted into large improvements in student performance and teacher-related measure of success (Shaha & Ellsworth, 2014b). The study quantified and evaluated results for teachers who *actively* participated in an online, on-demand PDL offering delivered via Internet, whose students significantly outperformed comparable cohorts for lower-participation teachers in the same school districts – equalized for socio-economic and similar factors. Year-over-year gains the student performance among higher-PDL-engagement educators were beyond expectation:

Impacts on Students, Educators & Schools:

1. 18.0% gain in reading achievement year-over-year ($p < .001$), nearly 4-times greater gains than the 4.9% year-over-year for matched low-engagement teachers.
2. 18.9% gain in math achievement year-over-year ($p < .001$), nearly 30-times greater gains than the 0.5% year-over-year for the lower-engagement teachers.
3. The impacts have also been studied and proven for traditionally low-achievement student populations, such as Title I (Shaha, et.al. 2015).
4. Dropout rates declined 20.0% ($p < .001$) year-over-year, nearly 4-times better than 4.9% lower for low-engagement educators ($p < .01$).
5. College-bound rates rose by 9.6% year-over-year for students self-reporting intention to attend college ($p < .001$) versus 0.0% change for the lower-engagement educators.
6. 33.2% year-over-year decline in student discipline occurrences ($p < .001$), 4-times better than the 7.4% decline in the lower engagement schools ($p < .01$).
7. 2.8% year-over-year improved teacher retention rates ($p < .001$), significantly above the 1.7% improvement for lower-engagement schools ($p < .01$).

Thus the journey from burdens to benefits should be substantively enhanced by such PDL. Increases in success and favorable impacts should be experienced for and through active educators, already part of educational systems and improved without leaving their employment. In these studies, PDL-enablement reduced tangible measures of struggle such as dropout rates, and higher college-bound rates, and higher retention among themselves as educators. Every-day teachers became more powerful and impactful agents for the betterments societies seek and need.

Our focus became projecting the cumulative impact of proven PDLs for achieving quantified successes once widely spread. We sought to quantify the cumulative magnitude of projected, collective impact of PDL-enabled and capacitated educators. Specifically, we computed largescale impacts when a research-proven PDL reduces dropout rates and teacher turnover, and improves student performance and percentages of college-bound students.

Quantitatively, how much can PDL-enhanced education, built within current systems without radical and unsettling upheaval, and without exorbitant expense, be projected to convert society's burdens to benefits?

Methods for Quantifying the Impact of High Performance Educators

We undertook the quantification of key societal burdens and the estimation of potential economic and societal benefits of improved education with the levels of favorable benefit shared above. Two critical data components were combined to produce the predictive modeling of maximized teacher efficacy through PDL.

First, we constructed a database from publicly available sources online reflecting data 10 years of history of educational factors and societal burdens from each of the 50 States. The data included student year-over-year performance on standardized assessments, dropout and graduation rates and teacher retention rates, as well as average citizen earnings, and amounts (\$) of publicly subsidized welfare, including healthcare-related. The detailed listing of data elements is discernable within the context of the Results as discussed.

Mean figures for each metric were computed by State and nation-wide from the data. Accuracy of the data were cross-checked and confirmed when possible through reviews of recent literature nationally and by State. Thus we obtained ample figures for quantifying the current costs associated with those key societal factors or burdens, from which computations could be developed for projecting the financially-associated benefits of high-impact education provided by enhanced educators. No changes were applied to dollar figures to reflect any nuances associated with inflation or other economic trends over time.

Second, we designed our statistical and analytical approaches for quantifying beneficial impacts of high-impact PDL (Shaha & Ellsworth, 2014b). We modelled potential societal benefits enabled through high-impact PDL versus the recent history. As gains in student performance ranged from approximately 5% to over 18%, across the studies, it was consistent that students increased at four-times greater rate, or more, with educators participating in high-impact PDL versus matched schools and educators (Shaha & Ellsworth H, 2013; Shaha & Glassett, 2015; Shaha, Glassett & Copas A, 2015a, 2015b; Shaha, Glassett & Ellsworth, 2015; Shaha, Glassett, Copas & Ellsworth, 2015a, 2015b).

Degree of teacher involvement – higher versus lower engagement – was proved to have significant impact on the degree of PDL-enabled benefit achieved (Shaha, S. H., Ellsworth, H. (2014b). Therefore, high and low PDL-impact estimates – conservative versus aggressive – were computed to reflect that nuance of educator involvement. We then modeled how the benefits of educators enhanced through high-impact PDL would generalizably affect the broader societal statistics. The more conservative modeling is shared first and in more detail.

From Burdens to Benefits: Computing the Potential Impact of High Performance Educators

From the data assembled – 10 years of history for 50 States – we computed that high school graduates earn an average \$30,627 annually. The corresponding annual earning figure for dropouts was \$10,386. That provided an average difference or beneficial advantage of \$20,241 more a year more for graduates than dropouts nationally, verifying similar figures derived in other studies (Alliance for Education, 2013). Therefore, in the effort to reduce burdens and convert them with benefits, decreasing dropout rates and increasing graduation rates produces \$20,241 higher income benefit for dropouts turned graduates (as well as for their tax-reliant governments).

The researchers also computed the average differences in welfare and health care cost between graduates and dropouts as a second estimate of burdens. The estimated difference between graduates and dropouts averaged \$9,425 annually for healthcare expenses and \$1,560 annually for welfare costs. Combined, those earning and welfare-related cost figures led to cumulative average benefit, or burden offset, of \$31,226 per graduate per year ($\$20,241 + \$9,425 + \$1,560$).

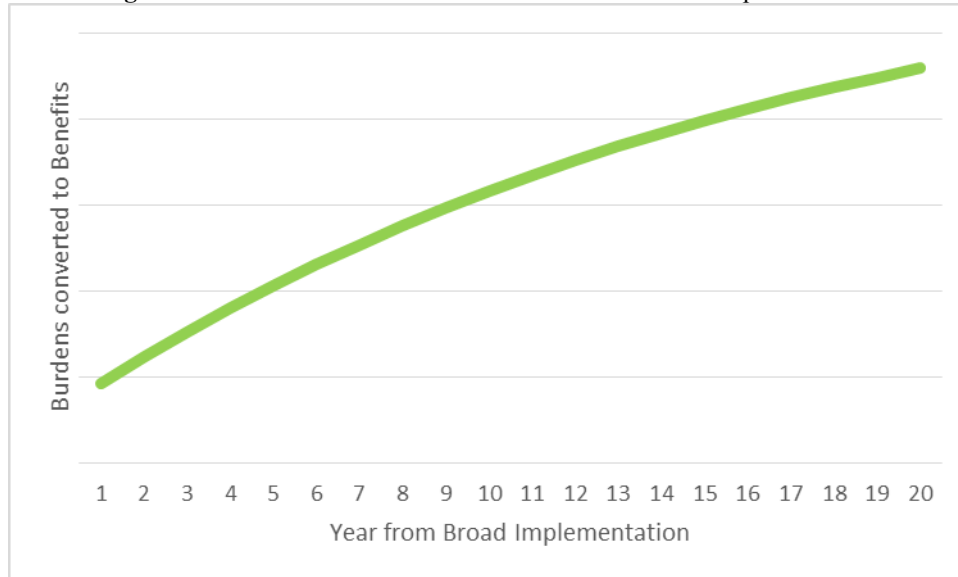
Those figures were then combined computationally to project the impact of decreased dropout rates and improved graduation rates. In the study previously cited, the dropout rate fall of 20.0% after one year of educator participation in the PDL was leveraged (Shaha & Ellsworth, 2014b). Our data showed the dropout rate averaging 28.3% nationally, with the graduation rate averaging 71.7%. A 20% reduction in the 28.3% dropout rate therefore would equate to a rate lessened by 5.66% in the first year, resulting in a new 20%-lower rate of 22.6%, and thus a graduation rate of 77.4%. That factor was then applied to our data figures of numbers of graduates and dropouts to project the net change for computational purposes, which showed a low, conservative estimate of 118,571 additional graduates per year.

We next applied those improvements in graduation and dropout rates, and we modelled impacts on the benefits and burdens already computed, all with our cumulative national data as the computational figures for numbers of student citizens as multiplicative factors. Given the increased earning rates previously shared, that change in dropout and graduation rates would mathematically yield approximately \$2.4 billion in additional annual earnings for graduates nation-wide. Beyond earning, the models from the data indicate that health care expenses would drop by \$1.12 billion with those improved graduation rates, and welfare expenses fall by \$185 million.

Combined, those figures reflect a net impact of shifting burdens to benefits of just over \$3.7 billion dollars in the first year of a nation-wide leveraging of the participation-driven PDL intervention researched (Table 1). We then

modeled further, holding the 5.6% reduction in dropouts as a yearly figure, further projecting the beneficial impact in increased earnings and decreased healthcare and welfare costs up to 20 years out (Figure 1).

Figure 1. Annual conversion of burdens to benefits from impactful PDL.



The figure correctly portrays the slight slowing or bending in the slope annually as the dropout rate continually decreases but never reaches zero. In the modeling, dropouts represent a continuously decreasing number year after year, but can never become better than 0%. The number of graduates, conversely, cannot ever exceed 100%. Therefore, there is a ceiling effect within the data, mathematically described as an asymptotic effect, which creates the ever-closer-but-never-reaching bend in the line.

Table 1. Projected Conversions of Burdens to Benefits

| Projection | Year 1 | Year 10 | Year 20 | 20 Year Cumulative |
|--------------|-----------------|-----------------|-----------------|--------------------|
| Conservative | \$3,702,504,817 | \$4,298,864,761 | \$4,680,842,447 | \$85,509,521,020 |
| Aggressive | \$6,957,517,241 | \$8,078,159,832 | \$8,795,948,591 | \$160,684,184,414 |

In 10 years, the total burdens-to-benefits conversion impact swells to \$4.3 billion for that tenth year. Within 20 years, the annual total rises to \$4.7 billion. Cumulatively, the 20-year total is projected to have reached \$85.5 billion. The incremental yet steady decreases in dropout rates modeled depict the possibility of graduations stretching from the current of 71.7% and 28.3% dropouts, to a new success level of 90.6% completion with less than 10% dropping out.

The less conservative, more aggressive projections from the same data source assembled predict a reduction of as many as 222,812 students not dropping out after the first year of full PDL implementation (Table 1, Figure 1). That number, when applied to the same models as above, result in a \$4.5 billion increase in salaries for the first year of modeling, with \$2.1 billion less in healthcare costs and \$348 million in welfare, totaling \$6.96 billion in benefits from former burdens. The graphic pattern is identical to the conservative previously shared (Figure 1). Projected to 20 years, that amounts to \$8.8 billion in burdens converted to benefits annually by the 20th year, with a cumulative 20-year impact of nearly \$161 billion.

Additional Benefits to Educators and Future Research

Beyond dropout rate decreases, the research already cited (Shaha & Ellsworth, 2014a, 2014b) also established additional gains attributed to participation in the high-impact PDL studied. Teacher retention rates were 65.9%

greater among educators in schools with the high-impact PDL versus matched schools without that PDL. Student disciplinary rates were reduced by 3 ½ times more among high-impact PDL participation schools than the matched schools without the PDL.

Data to financially specify or model the impacts of these advantages and gains are too complex and were not readily available, and therefore beyond the scope of this undertaking and not completed within this research. However, any school or educational entity seeking to justify the return on investment associated with adopting the high-impact PDL can readily use these figures to estimate local beneficial impact of the this PDL. Future studies are merited.

DISCUSSION AND CONCLUSION

In the United States and similar societies education is lauded as a basic fundamental for growth, progress and success, and thus as a responsibility of governments and a right of citizens (Bowles & Gintis, 1976; Counts, 1945; Rose, 1995). Despite massive expenditures and sustainment of education, however, the burdens on society for sustaining suboptimal citizen outcomes continue to rise (Hacker, 2002).

What this research shows is the projected long-term effects or returns on investment for high-performance PDL solutions are inspiring and merit strong consideration. The models are built on rigorous studies showing high-impact PDL has sustained beneficial impacts over seven years with net gains in student performance of over 12 percentage points versus 1st year figures (Shaha, Glassett & Ellsworth, 2015a, 2015b). The multi-year benefits projected to 10 and 20 year scenarios cannot be ignored. The modeling implies that, should high-impact PDL be utilized appropriately throughout the society, America could potentially reduce its current burden load, and trade those burdens for benefits, conservatively up to \$85 billion in increased income for citizens and decreased healthcare and welfare costs.

We remain among those who believe that education and the educational experience remains an appropriately valued and lauded asset for everyone, the individuals and the society to which they belong. We also believe that educators are key to this success. We also understand that each American has had experiences making it clear that every educator and teacher can benefit from supportive and personally customized improvement.

It is strongly recommended that educators be empowered and better equipped to help make the difference needed for moving our society from burdens to benefits through impactful education. Educational leaders should hold themselves accountable to their constituencies and select professional learning and learning solutions with proven impacts for student benefits, as well as for other benefits to teachers, schools and educational institutions. Additional studies have shown how the same high-impact PDL solution referenced was effective for students in the most challenging categories, such as Title 1 (Shaha, et.al, 2015).

The United States and similar societies cannot remedy challenges to the society until leaders invest where needed, and maintain focus on the end results most cherished. This research shows that education can make a great deal in the difference needed through more educators helped to maximize the capacity and effect on students through high-impact professional learning.

AUTHOR BIOGRAPHIES

Professor Steven Shaha has 35+ years of experience in program evaluation and outcomes research. He has competed 100+ educational program evaluations for public, private, for-profit and not-for-profit. He has advised 200+ organizations, educational and not, on four continents. Prof Shaha holds two masters degrees in educationally focused areas, and doctorates in Research Methods & Applied Statistics (PhD) and in Business Administration (DBA). Globally he has accumulated 200+ conference presentations, 100+ journal publications and four books. He has taught or lectured at 18+ universities globally, including Harvard, Cambridge (UK), the King's College, Princeton, Columbia, Cornell, UCLA and Zayed University (UAE). In 2015, the United Nations requested him to present twice.

Prof Shaha has also helped 50+ of non-educational organizations listed among the top 100, including e.g. Disney, Ritz-Carlton, RAND, Coca-Cola, Time-Warner, Intel, IBM, Marriott and New Line Cinema. He also served as advisor for Malcolm Baldrige National Quality Award for Education.

Kelly Glassett, Ph.D., currently serves as the content specialist for School Improvement. Prior to his current position he was an Associate Professor and Director of Teacher Education at SIUC. The focus of his scholarship and research activity has been directed towards teacher preparation, literacy and learning in 21st century classrooms, and technology integration in educational environments. He has worked as a classroom teacher in K-12 settings for over fifteen years and taught at the collegiate level for over eight years. He has authored or coauthored over 35 peer-reviewed articles and over 70 conference presentations on his research.
Email: Kelly.glassett@schoolimprovement.com

David Rosenlund is the Client Strategy Review Lead at O.C. Tanner Recognition Company. David has over 15 years of industry experience, and provides expertise in procurement, client services, marketing, market research, and internal strategic sales. David has also experience with educational funding research.

He specializes in both qualitative and quantitative research and evaluation of key competition and market trends, and currently consults with O.C. Tanner clients on how to strengthen their internal cultures of appreciation through recognition solutions. David draws upon years of experience with impact research, providing David with a unique ability to uncover stories buried deep in data.

David has a BS in Economics from the University of Utah, and an MBA from Westminster. In his free time David also volunteers with Boy Scouts of America.

Aimee Copas, Ph.D., is the Executive Director for the North Dakota (USA) Council of Educational Leaders; the organization that provides the strongest unifying voice representing/supporting educational leaders in pursuit of quality education for all students. Aimee is also an adjunct professor for the University of Mary and NDSU. Aimee was the Associate Vice Chancellor for Academic Affairs/Director of Research for the North Dakota University System, a college dean, principal, English teacher, basketball coach, & National Trainer for a pharmaceutical company. Aimee acquired her undergraduate degree from the University of Mary, her MS at Northern State University, & Doctorate from the University of South Dakota.

Lisa Huddleston is the principal of Livingston County Middle School in Burna, Kentucky. Lisa has also been an adjunct professor for the University of Kentucky's Hopkinsville Community and Technical College System and a high school math teacher. Lisa acquired her undergraduate degree from the University of Kentucky, her MA at Austin Peay State University, & her Rank I in Administration and Supervision from Murray State University.

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