

What Inadequate Education Costs Society

Calculating the long-term costs resulting from lost economic growth

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on behalf of the Bertelsmann Stiftung



Foreword

More than one-fifth of all 15-year-olds in Germany do not have the basic competencies they need to participate in the job market or society at large in a proactive, self-determined way. The OECD's PISA studies designate these youngsters as at-risk students, since they only have elementary-level mathematics and reading skills. In other words, their level of education is inadequate. Such students will have problems finding a training position and, later, a job; what's more, unemployment will threaten repeatedly over the course of their working lives. Ultimately, society itself bears the costs of inadequate education. The study presented here examines the long-term costs of inadequate education resulting from lost economic growth. It was written on behalf of the Bertelsmann Stiftung by the recognized educational economist Ludger Woessmann and his colleague Marc Piopiunik. The study is part of our Social Costs of Inadequate Education project. The main focus of this project is to make obvious how important a fair and high-quality educational system is for both individuals and society at large.

The study's authors identify the costs of inadequate education by calculating the growth effects that would result if educational reforms were implemented that reduce inadequate education step by step over the next 10 years. The growth increases following such reforms are then observed over a period of 80 years – the average life expectancy of a child born today – and compared with the growth that would take place if no reforms were implemented. The annual benefits are discounted to reflect their present value and then summed. The study shows that educational reforms of this nature could produce returns of up to 2.81 trillion Euro through the year 2090 – more than Germany's entire current gross domestic product. These gains are exactly equivalent to the costs of inadequate education that would result from lost economic growth. The amount of the expected gains differs in each German state in light of the varying conditions currently present there. The growth effects, however, are so significant that they should serve as a clear incentive for all of Germany's states to introduce educational reforms.

The immense amount in question – 2.81 trillion Euro – could in fact be cause for skepticism. How, one might ask, is it possible in a time of economic crisis to calculate growth over such an extended period? Every long-term forecast is of course subject to some uncertainty, since assumptions must be made about future developments. The assumptions used here are therefore highly cautious, resulting in conservative estimates of future returns. With its extended observation period, moreover, this study enters uncharted territory in terms of educational policy. In education as in climate protection, however, such long-term timeframes are necessary. Educational reforms only exert their full impact gradually – an impact that, for society, is a fundamental, long-term one. Such reforms, for example, need time if they are to be accepted by educators and students alike. In addition, once the reforms are in place, better educated youngsters will only enter the job market gradually, replacing the current workforce decade by decade. The relevant growth factors thus only make themselves felt over time.

As the study's findings show, our children and grandchildren will benefit most from the resulting long-term growth. Today's population, however, will also reap the rewards of an educational reform that targets at-risk students, since an educational system that offers equal opportunities to all also promotes social cohesion, civic engagement, political stability and personal satisfaction. Such benefits will become evident long before the growth effects identified here. Above all, it is unacceptable from an ethical point of view that Germany's educational system does not adequately support socially disadvantaged children and those from immigrant families in developing their full potential. An educational reform must therefore be carried out that makes it possible for all children and adolescents to develop basic cognitive and socioemotional skills so they can participate actively in the working world and in society in general. The social costs identified here also provide an additional argument for reform, namely that effective investments in education are financially beneficial for society over the long term.

What would an educational reform look like that significantly reduces the number of at-risk students? First, it is imperative that the living and learning conditions of such students and their often socially disadvantaged families be improved. Their heterogeneity and cultural diversity – many are from immigrant families – should be seen as an enrichment for German society and should serve as a focal point for all efforts undertaken throughout the educational system. This would necessitate changes and paradigm shifts at multiple spots within the system. Educators must, for example, assume that every child will be addressed individually in order to promote his or her development in the best possible manner. Youngsters should spend longer periods of time learning together in heterogeneous groups. Schools and teaching staff must take greater responsibility for their institution's success, instead of forcing weaker students to repeat a year or even to leave school entirely. Given their key social role, schools must become venues where diversity is appreciated and where all constituents – children, educators, parents and the surrounding community – experience the opportunities that result from living and learning together. Helping schools in Germany transition to an all-day format would therefore be a critical step. Finally, since children learn best from other children, they need successful role models – particularly role models who are at home in their own social environment.

Additional resources must be invested in a more effective manner if an educational system is to be created that is capable of promoting children on an individual level. It has been shown, for example, that quality early childhood education programs can help children overcome disadvantages, thus providing the basis for learning processes that come later. The prerequisite is, however, that all children have access to early childhood education. In addition, childcare facilities and schools need sufficient qualified staff and resources if they are to offer a high-quality educational experience that reflects the individual situation of each child. In this regard, more effective funding means distributing financial resources unequal so it can respond to the varying specific needs and challenges that are present.

It is also critical that educational institutions and parents work closely together if the learning biographies of at-risk students are to be considered in a meaningful manner. Such partnerships can greatly improve the living and learning situations of children over the long term, something childcare facilities and schools cannot accomplish alone. What this requires are structures and services that are offered directly in the social environment experienced by children and their families. Networks are needed in socially disadvantaged settings in particular that allow educational institutions to work with youth services personnel, healthcare providers, local organizations, churches and mosques, to name just a few. Working together, these actors can transform society's disadvantaged social environments into venues for promoting integration.

Implementing the educational reforms described above requires vision, courage and a willingness to change. The study presented here clearly shows that reducing inadequate education in Germany is one of the key issues determining the country's future. Both Germany's economic prosperity and its social cohesion depend on our providing all children with the chance to participate in society in a proactive, self-determined way.



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Summary

Approximately every fifth child in Germany receives an inadequate education – a state of affairs that is costing the country some 2.8 trillion Euro (2.800.000.000.000). Those are the findings of forecasts carried out to determine how Germany’s gross domestic product (GDP) would change if the country were to implement reforms that largely eliminate “inadequate education” – the term used to designate the situation when schools do not provide children with a basic level of education. The PISA study refers in this context to “at-risk students”. A 15-year-old, for example, who does not score higher than 420 points in mathematics on the PISA test score is seen as not having elementary skills. These children lack the fundamental abilities that will later be necessary for joining the working world and for participating in society. Educational policies must therefore focus on ensuring that all students are provided with such basic competencies. The model behind the study’s forecasts assumes an educational reform is implemented that does not completely eliminate inadequate education, but begins in the year 2010 to reduce it over the following decade by 90 percent.

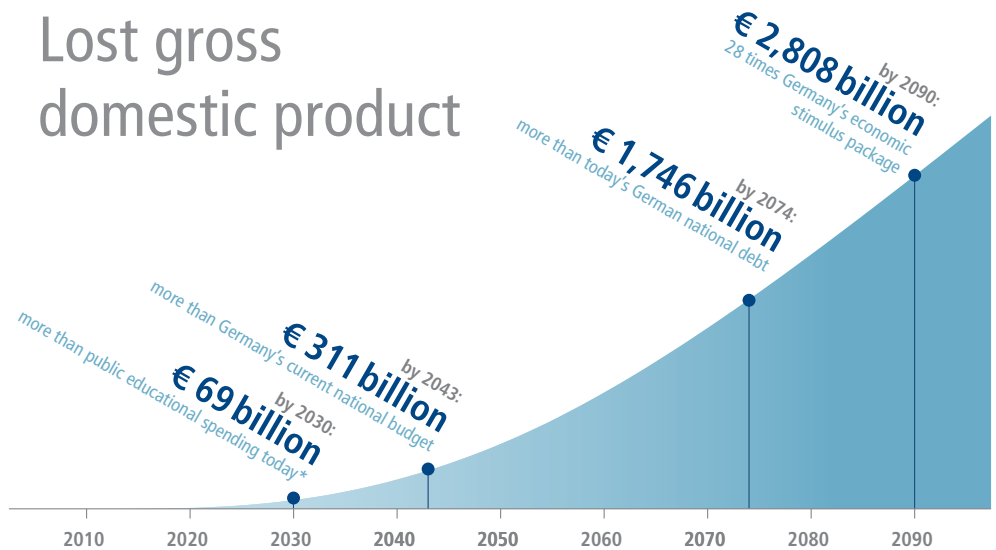
The forecast takes all economic benefits into account that would accrue throughout the lifetime of a child born today, i.e. through the year 2090. All future gains in GDP resulting from the reform are expressed in terms of their present value and then summed. The extent of the economic growth resulting from the reform is derived from econometric models that have empirically ascertained in international comparison the correlation between cognitive skills and long-term economic growth. Given the numerous conservative assumptions used in the forecast, our basic scenario undoubtedly underestimates the overall impact to a significant degree.

The benefits from a reform that largely eliminates inadequate education exactly reflect the costs that will ensue if Germany’s policymakers are not successful in eliminating it. As depicted in Figure 1, at 2.8 trillion Euro, the costs that would accrue over the course of the lifetime of a child born today would be greater than Germany’s current GDP of 2.5 trillion Euro. This would also be sufficient to fund 28 times the 100-billion Euro stimulus package that the country’s federal government recently passed to respond to the current economic crisis. The returns that would accrue through 2074 would also be enough to pay off the country’s entire current public debt of 1.7 trillion Euro.

According to the forecast, as of 2048 Germany’s GDP would be at least 2.6 percent higher each year than it would be were no educational reform to take place. Measured as a share of GDP, the yearly gains would thus be enough to finance all public spending on elementary and general-education secondary schools! In 2090, GDP would be more than 10 percent higher than it otherwise would be if no reforms were carried out.

Based on Germany’s current population, inadequate education would result in the country’s GDP being less over the next 80 years by more than 34,000 Euro for each child born today. The study’s projections here reveal significant differences among Germany’s states. The range of per-capita effects varies from some 16,000 Euro in Saxony and Thuringia to approximately 45,000 Euro in Hessen, Schleswig-Holstein/Hamburg and North Rhine-Westphalia. The latter states would benefit in particular from a successful reform of the country’s educational system, something that should serve as a major incentive to implementing the necessary changes.

Figure 1: Costs of inadequate education resulting from lost economic growth in Germany



The costs of inadequate education as a sum of the GDP lost each year, if the extent of inadequate education is not reduced by 90 percent through educational reform, discounted to reflect present values.

* Public spending on elementary and general education secondary schools.

Source: Bertelsmann Stiftung: Was unzureichende Bildung kostet, Gütersloh 2009. (Authors of the study: Ludger Woessmann and Marc Piopiunik).

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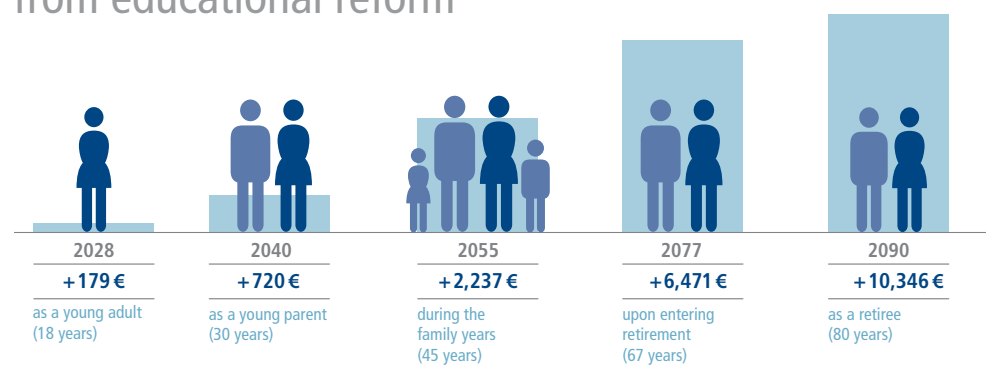
As the progression of the growth effects shows, the economic benefits of a successful educational reform will become evident primarily over the long term. In the first two decades following implementation of reform measures, the economic gains would remain relatively modest. The measures must first be carried out throughout the school system; the country’s youngsters must then pass through the improved system; finally, these better-educated young people must enter the job market. It will therefore take approximately 50 years for the effects of inadequate education to be eliminated from the entire working-age population.

Figure 2 makes clear how the gains from an educational reform increasingly accrue over the course of the lifetime of a child born today in the form of additional per-capita GDP. While children

born the same year the reform is implemented do not notice an appreciable difference during their childhood and adolescence, they will have an additional 179 Euro in per-capita GDP available to them at the age of 18. At the age of 30, a time when many are starting families, they will already have 720 Euro more at their disposal than would have been the case without a reform. By the age of 45, per-capita GDP will have risen by 2,237 Euro. Children born today will benefit most once the reform's growth effects have had their maximum long-term impact. When they enter retirement at the age of 67, for example, they will have 6,471 Euro available to them. By the time such children are 80, per-capita GDP will have risen to 10,346 Euro more than it would have been had no educational reform taken place.

Figure 2: Additional yearly per-capita GDP resulting from educational German reform

How a child born today would benefit from educational reform



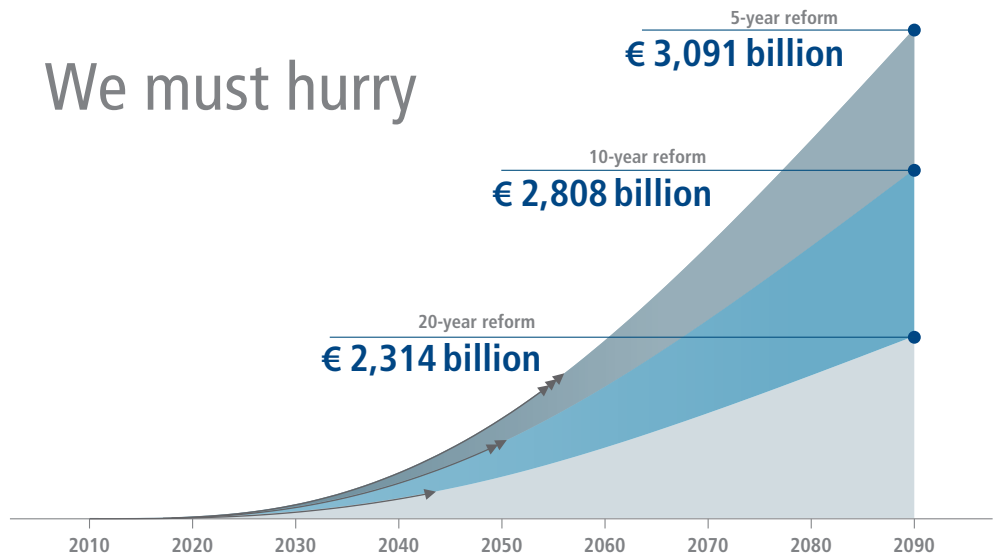
Source: Bertelsmann Stiftung: Was unzureichende Bildung kostet, Gütersloh 2009.
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All of this serves to show that the same parameters must apply to educational policy as to environmental policy, i.e. educational policies must take a long-term perspective if they are to consider the full effects of any given educational reform and ensure that all of its gains are accounted for. After all, our children are the ones who would benefit throughout their lives from efforts carried out today to eliminate inadequate education.

The study's projections, moreover, make clear that taking action quickly would have a greater pay off (see Figure 3). For example, if the reform were to be implemented in only 5 years instead of the assumed 10, the impact of the reform would increase by some 280 billion Euro. Were it to take 20 years, however, the impact would be almost 500 billion Euro less compared to a reform carried out over 10 years. As these figures make clear, it is imperative that educational policymakers act soon.

Figure 3: Benefits of educational German reform based on length of implementation



Sum of increased GDP growth achieved through each year listed, discounted to reflect present values.

Source: Bertelsmann Stiftung: Was unzureichende Bildung kostet, Gütersloh 2009.
(Authors of the study: Ludger Woessmann and Marc Piopiunik).

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Besides the base scenario other scenarios have been calculated. For example, were inadequate education to be eliminated among weaker students to the extent that is currently the case in Finland, the benefits of educational reform would amount to 2.4 trillion Euro, almost equal to the amount in the base scenario. Would it be possible, however, to raise students in Germany on average to the average level in Finland, the gains would rise to 9.6 trillion Euro. Alternatively, merely boosting all German states to the current Bavarian average would produce long-term economic benefits of 5.2 trillion Euro.

A large number of young people in the German educational system, often referred to as “at-risk students,” do not currently have even a minimum of basic competencies, a glaring social shortcoming we are obliged to address solely from a moral standpoint. Beyond such social considerations, massive economic benefits would accrue should we prove successful in providing these students with long-term support. As the study’s findings show: the costs that will currently result from inadequate education in the form of lost economic growth are immense. Clearly, in every respect, ineffective educational policies are simply too expensive to bear.

Reduce the number of at-risk students!

Selected proposals for reform

Robust educational policies must ensure that all children and adolescents develop a basis of cognitive and socio-emotional skills so that they can become active participants in the job market and society at large. It is not acceptable that almost every fifth teenager in Germany is at risk in terms of his or her educational development. Such children often come from socially disadvantaged families or have a migration background.

It is critical that we improve the living and learning environments that these children and their families experience every day. In addition, we must begin appreciating their diversity and the variety of ways their cultural backgrounds enrich society – an attitude that must underlie the activities undertaken in all educational venues. This will require paradigm shifts, vision and courage.

1. Investing early is better than fixing problems later. Making early childhood education available to all children is the key to equal opportunity later in life.

- Childcare providers must offer children high-quality educational experiences that reflect their individual situations. To do so, educational facilities must have sufficient qualified staff and resources at their disposal.
- Childcare providers must recognize and assess each child's individual background. This must become the point of departure for all educational activities.
- Efforts must be made to increase the social participation of immigrant children and those from socially disadvantaged families, something that is especially critical for children three years or younger. Such efforts create equity and provide a solid basis for later learning experiences. Parents must be encouraged to enroll their children in a high-quality childcare center as early as possible.
- Childcare centers and schools must collaborate so that children can transition from one to the other without disruption.

2. Strengthen the weak without weakening the strong. Each child must receive individual support.

- The educational system has a clear mandate to promote each child on an individual level. As educational professionals, childcare workers and teachers must base all of the activities within their educational institution on an appreciation of each child and his or her level of knowledge, learning potential and personal background. The overall focus must be on helping each child develop to his or her maximum potential.

- Educators and entire schools must take the initiative. Students must spend more time learning in heterogeneous groups. Only in exceptional cases should students be removed from school or forced to repeat a year.
- A number of prerequisites, such as healthy nutrition and physical activity, are critical when it comes to ensuring optimal outcomes among at-risk students. In addition, language skills must be developed early on and must be emphasized in everyday educational contexts. At the same time, native-language skills must also be respected. This means that to a greater degree than in the past educational institutions must employ multilingual staff who themselves have immigrated or come from immigrant families.
- In addition to their professional expertise, childcare workers and teachers must have the ability to serve effectively as learning coaches (i.e., with diagnostic, didactic, pedagogic, intercultural and advisory skills). The required skills must be developed during training courses offered on an ongoing basis.
- The educational system must ensure progression, and structures that prove inefficient at helping students transition from one level to the next must be eliminated. The focus must be on facilitating a smooth transition from school to work.

3. All actors must join to take more responsibility for educational success.

Educational institutions must be venues for promoting integration.

- Especially in socially disadvantaged settings, childcare centers and schools must cooperate closely with parents.
- Schools must be open all day as well as during school breaks for communal learning activities.
- Childcare centers and schools must focus on the needs of families by offering integrated social services (i.e., those related to crisis intervention, preventative healthcare, language learning and career development). To achieve this, they must cooperate with other actors in the community such as religious institutions, medical professionals, immigrant associations, sports clubs, government job centers and the business community. They must come together as interdisciplinary teams to improve educational offerings on a regional level.
- Children and their parents need successful role models, especially those with backgrounds similar to their own. These role models must make clear that education is the key to success in life.

4. Use inequality to overcome inequality. Resources must be invested more effectively to achieve better educational outcomes.

- All levels (federal, state and local) must make more financial resources available for education. Society benefits directly from what it spends on education; saving on education is expensive!!
- In Germany more must be invested in particular in early childhood education. Every child must be put in a position to take advantage of high-quality educational opportunities during early childhood.
- Effective educational efforts require a needs-based distribution of financial resources. More than in the past, funds must target those areas facing the greatest challenges. If resources are distributed according to the principle of “one size fits all” then disparities among educational institutions cannot be overcome.
- Achieving these goals will require changing current funding structures – which will, in turn, require courage on the part of policymakers and a willingness on the part of society as a whole to distribute resources in a fairer manner.

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