The Effects of Teacher Salary on Innovation and Global Competitiveness

Executive Summary

In the United States, inadequate teacher compensation and underfunding of education have far-reaching consequences. Beyond staffing concerns, low salaries contribute to a lack of motivation and job satisfaction, impacting the commitment and enthusiasm of educators. Insufficient funding for education further limits resources for professional development, keeping teachers from being up to date on evolving methodology and technology, directly affecting the quality of education provided to students.

The consequences of this problem reach far beyond the classroom; many agencies, organizations, and groups linked to education are affected. The interconnected nature of education and innovation means the impact reaches diverse sectors and stakeholders. Collaborative efforts among agencies are crucial to addressing these challenges and fostering an environment conducive to high-quality education and innovation. Teacher turnover has become a pressing issue. Many educators express readiness to leave the profession earlier than initially planned. The resulting decrease in the quality of education provided due to this turnover, in addition to heavy workloads, mental health challenges, and insufficient support, has a severe impact on student outcomes. The recruitment and retention of highly qualified teachers has become challenging due to inadequate compensation, leading to teacher shortages and disruptions in educational programs. The economic implications of teacher turnover are also substantial, with replacement costs in the billions annually. Redirecting funds toward constructive avenues like teacher mentoring programs and increased salaries could significantly contribute to the educational environment.

The historical trajectory of the United States as an innovation leader is challenged, particularly with the rapid rise of China. China's strategic investments in education, research, and development have positioned it as a formidable competitor. The U.S. has historically benefited from a diverse talent pool, but a decline in education quality has increased reliance on foreign talent to drive innovation. The consequences of a diminished capacity for innovation are far-reaching, including economic stagnation, reduced global competitiveness, limited technological advancement, and dependency on foreign innovation. These effects highlight the importance of fostering creativity, research, and development for long-term prosperity and competitiveness. Addressing this issue requires a comprehensive, collaborative approach involving various stakeholders and prioritizing education funding to raise teacher salaries and ensure pay equity nationwide. Government agencies and private organizations should collaborate to attract and support aspiring teachers. Opportunities such as grants and scholarships, expanding student loan forgiveness programs, investing in professional development programs, and considering regional variations in the cost of living can make the teaching profession more appealing and financially viable.

Resolving the issue requires a coordinated and collaborative effort among involved governments, agencies, and organizations. Partnerships between government agencies and private businesses are essential for aligning education programs with the demands of industries leading innovation. Interagency task forces can inform policymakers, including representatives from education departments, research institutions, and industry partners.

Community involvement and engagement are crucial for securing support from localities, non-profits, and advocacy organizations. Community engagement boosts optimism among

teachers, which, in turn, improves student experiences. Investment in research and development focused on education and innovation drives long-term solutions.

Addressing these challenges posed by underpaying teachers and underfunding education is crucial for the future competitiveness and innovation capacity of the United States. A comprehensive, collaborative, and sustained effort will ensure a well-compensated and motivated teaching workforce, fostering a thriving educational landscape that benefits educators and society.

The Problem and its Affects

In the United States, teachers grapple with inadequate compensation, and education faces chronic underfunding. The repercussions of underfunding teachers and education extend beyond staffing concerns. Low salaries foster a lack of motivation and job satisfaction among teachers, eroding their enthusiasm and commitment. Additionally, limited funding for education translates to meager resources for professional development, hindering teachers' ability to stay abreast of evolving teaching methods, technologies, and research. This stunted professional growth compromises the quality of education provided to students.

The effects of this problem are not only felt in school systems but also by industries, organizations, or groups that are in any way adjacent to education. Bustillo and Patrinos, for the World Bank, say, “Today, there is agreement that education, independent of innate ability, helps spur innovation and technology, and it contributes to productivity and economic growth” (Velez Bustillo & Patrinos, 2023, para 4). Some of the agencies, organizations, and groups are the U.S. Department of Commerce, the U.S. Department of Education, workforce and labor development departments, the National Institutes for Health, state and local health departments, public school

districts, the International Trade Administration, the U.S. Foreign Service, public and private research institutions, and nonprofits that are focused on research, education, and innovation. The interconnected nature of education and innovation means that the impact extends beyond specific agencies, influencing various sectors and stakeholders. Collaborative efforts among these agencies are crucial to addressing the challenges and fostering an environment conducive to education quality and innovation.

Challenges

Teacher turnover and a decrease in the quality of education

According to We Are Teachers, "Fifty-five percent of educators now indicate that they are ready to leave the profession earlier than planned" (We Are Teachers Staff, 2023, para 3). In fact, of that 55 percent, 35 percent say they plan to quit within the next two years (para. 4). "In Louisiana, for example, nearly seven thousand teachers left teaching after the last school year, or about one thousand more than usual, a turnover rate of 14 percent, up from between 11 percent and 12 percent in a typical pre-pandemic year (Barnum, 2023, para. 11). While teachers take on more work due to unfilled openings in their schools, teachers have become the number one burnt-out profession in the United States (Peck, 2023, para. 18). We Are Teachers reports that "78 percent of teachers said that a higher salary would keep them in teaching" (We Are Teachers Staff, 2023, para. 7). Because of low salaries compounded with increased out-of-pocket expenses, heavy workloads due to understaffing, mental health challenges due to the nature of the job, lack of support, and disrespect from parents and the public, "only ten percent of educators would strongly recommend the profession to a young adult" (para. 16).

Underpaying teachers and underfunding education in general results in a cycle of teacher turnover and adverse effects on the quality of public school education. The recruitment and retention of highly qualified teachers becomes challenging in the face of insufficient compensation. Many educators opt to leave the profession in pursuit of more lucrative opportunities, exacerbating the turnover rates and causing teacher shortages that disrupt the stability and continuity of educational programs. For the Economic Policy Institute, Emma Garcia and Elaine Weiss write, “Teachers have long been underpaid compared with similarly educated workers in other professions, with a pay gap that has grown substantially in the past two decades” (García & Weiss, 2019, p.12). Boser and Strauss, for The Center for American Progress, report that even pre-pandemic, teachers in more than 30 states heading households of four would qualify for several forms of government assistance (Boser & Straus, 2014, p. 3).

The key to high-quality education is the expertise of skilled and experienced teachers. However, a lack of consistency due to frequent turnover and the influx of inexperienced teachers directly impacts student performance. The absence of sustained guidance and support hinders academic outcomes, leading to a decline in overall achievement. Creating a well-paid teaching profession is pivotal in attracting individuals with diverse skills, backgrounds, and experiences. These educators inject fresh perspectives and innovative teaching methods into classrooms. Conversely, underpaid teachers contend with financial constraints that curtail their ability to implement creative and engaging teaching strategies, potentially impeding the development of critical thinking and problem-solving skills in students.

A Consortium for Policy Research in Education report from 2021 says that the teaching force has "far more beginners than before" (Ingersoll et al., 2021, p. 14). For example, in 1987-88, there were about 84,000 first-year teachers and 1 million teachers (37 percent of teachers)

with ten or fewer years of experience. By 2017-18, there were about 300,000 first-year teachers and 1.8 million teachers (about 44 percent of teachers) with ten or fewer years of experience. (p. 14).

Teaching Experience of Teachers, 1987-88 and 2017-18

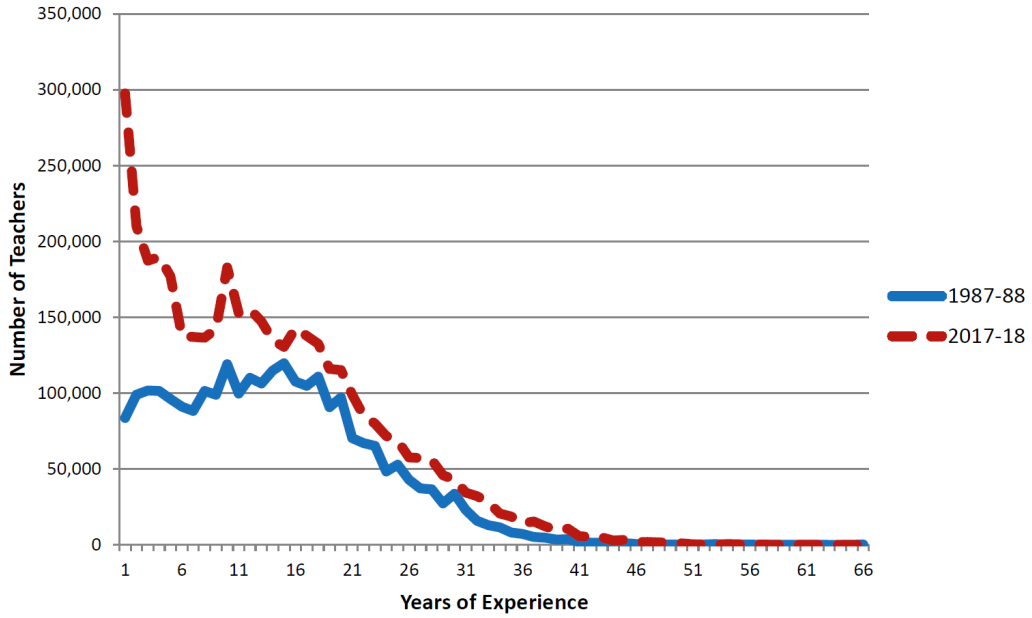

Table from *Seven Trends: The Transformation of the Teaching Force*, January 2021, page 14. Consortium for Policy Research in Education, University of Pennsylvania.

Losing experienced teachers due to turnover affects the student first and foremost. Connections with teachers provide students with mentorship, encouragement, and role models. When students lose access to the teachers with whom they have connected, they lose that source of encouragement, resulting in a loss of engagement. Teacher turnover causes schools to rely more heavily on substitute teachers, who typically have less experience and lower levels of credentialing than full-time educators. American University's School of Education blog says,

“Qualified teachers know how to create lesson plans that adhere to a set curriculum while keeping students engaged and excited. When teachers leave midyear, substitutes may struggle to successfully take over” (American University School of Education, 2022, para. 10). “In most states, headlines and data about the effects of shortages […] are commonplace” (Darling-Hammond et al., 2017, para. 14). "The most important reason that teacher turnover matters is its impact on students (Darling-Hammond et al., 2017, para. 11). The turnover rates impact student achievement negatively for all students in a school, not just the students in classrooms with new teachers (para. 11).

Teacher shortages disproportionately affect lower-income students, students learning English, and minority students (Carver-Thomas & Darling-Hammond, 2017, p. 12). For example, California teachers in high-minority schools are approximately three times more likely to teach on an emergency-style credential than those in a low-minority school. Similarly, in high-poverty schools, these credentials are twice as common as in low-poverty schools. This trend is also true for teachers hired with intern credentials in California. Eighty-three percent of California school districts serving the most English Learner students report shortages; 64 percent of districts with the fewest English Learners report shortages. (Carver-Thomas & Darling-Hammond, 2017, p. 12.)

Since 1997, public schools have experienced an average enrollment increase of seven percent (Hussar & Bailey, 2014). However, funding to compensate for this increase falls significantly behind the requirement needed. It is important to note that during this same period, teachers were exiting the profession at alarming numbers, reducing stability within the classroom while the pupil-to-teacher ratios increased, thus reducing the overall quality of education provided. Since the COVID-19 pandemic, the American public school systems has over 500,000

fewer educators; “more than 300,000 teachers and other education-related staff left their jobs between February 2020 and May 2022,” which is about three percent of the workforce (Peck, 2023, para. 16).

Turnover, besides affecting teachers’ livelihood and student achievement, is expensive. The National Center for Education Statistics reports that 44 percent of public schools posted full or part-time teaching vacancies in early 2022 due to “unforeseen resignations and forceful reliability on non-teaching staff” (as cited by Peck, 2023 para. 24). "More than 61 percent of school administrators have found it difficult to hire personnel, "including roles for teachers, substitutes, counselors, administrators, and mental health professionals." He says, "This is set to worsen as fewer college students (one-third since 2008) enter and complete teacher education and preparation programs (Peck, 2023, para. 25). The expenses related to replacing teachers including recruitment, hiring, and training, total an average of $9,000 in rural areas and over $20,000 in urban districts; this exceeds eight billion dollars annually (Darling-Hammond et al., 2017, para. 1).

The resources earmarked for teacher replacements could be redirected towards more constructive avenues, such as investing in teacher mentoring programs, comprehensive professional development initiatives, and recruiting additional staff and counselors. These strategic allocations could significantly contribute to an enriched educational environment by alleviating teacher workloads and enhancing student support systems. More obviously, the funds could be put toward a well-deserved increase in teacher salaries, fostering greater job satisfaction and retention.

Diminished capacity for innovation and global competitiveness

After World War II, the United States economy grew significantly and became an economic powerhouse. This time was known as the Creative Age, and "after the war, federal funding for basic research jumped considerably, and so did the number of people pursuing higher education, thanks in part to the GI Bill" (Florida, 2014, para. 7). Research and development investments, an emphasis on education, and innovation made it a technological leader. Nearing the end of the 20th century and into the 21st century, China's economy developed rapidly thus taking them from a primarily agricultural society to an industrial and technological competitor with the United States. China adopted economic reforms, allowed foreign investment, and introduced policies encouraging innovation and technological advancement.

While the United States has long been a leader in international trade, China positioned itself as "the world's factory"; economic growth from manufacturing and exports made it a significant entity in global trade (Bajpai, 2022, para. 1). With a desire to compete, China invested in education, research, and development. While the United States has historically used government funding to invest in research, development, and higher education through agencies like the National Science Foundation (NSF) and the National Institutes of Health (NIH), the Chinese government has implemented its plans to boost innovation. The "Made in China 2024" initiative is a "state-led industrial policy that seeks to make China dominant in global high-tech manufacturing" (McBride, 2019, para. 1).

The United States has benefited from a diverse international talent pool. With the decline in education quality, the United States has begun to rely more heavily on foreign talent to drive innovation. "Immigrants produce a significant percentage of innovations in America," according

to Stuart Anderson for Forbes (Anderson, 2023, para. 1). "We find immigrants represent 16 percent of all U.S. inventors but produced 23 percent of total innovation output as measured by number of patents, patent citations, and the economic value of these patents" (para. 2). This increased reliance on international talent to compensate.

Ian Clay and Robert D. Atkinson, for the Information Technology and Innovation Foundation says, “Based on key indicators of innovation and advanced-industry performance, China has surpassed the United States in total innovation output and is getting close on a proportional basis (Clay & Atkinson, 2023, para. 1). China has proven capable of leading the world in advanced technologies like supercomputers and high-speed rail systems (para. 2). The potential that China has for innovation "threatens the market share of the United States and allied nations in high-value-added, advanced industries" (para 2). China's experienced a 17 percent growth in innovation capabilities from 2010 to 2020, rising from 58 percent to 75 percent of the United States' capabilities (para 4). While they still face economic challenges, China's progress indicates that "it is on the path to overtake the United States in innovation and advanced-industry output" (para. 7).

Decreased quality of education can limit students and impact the workforce- and a workforce that is not highly educated or creative impacts its ability to innovate. A diminished capacity for innovation has consequences for various aspects of the socio-economic landscape: economic stagnation, reduced global competitiveness, limited technological advancement, job market challenges, strain on the educational system, dependency on foreign innovation, and impact on quality of life and culture. These effects highlight the importance of fostering creativity, research, and development to ensure long-term prosperity and competitiveness.

The decrease in the quality of education in the United States has significant implications for the country's competitiveness in innovation. A decline in educational quality contributes to a workforce with skills gaps; graduates lack the technical and problem-solving skills demanded by innovative industries, impeding the development of technologies. When students are inadequately prepared in Science, Technology, Engineering, and Mathematics (STEM) fields, which are critical for innovation, fewer students can pursue careers in STEM which limits the pool of talent available for innovation leading industries.

Education has a critical role in a nation's global competitiveness. Without adequate investment in education, the United States risks falling behind other countries regarding innovation, research, and workforce development. An innovative workforce is imperative for maintaining a competitive edge across various fields. Addressing these challenges is critical for policymakers. Prioritizing sufficient funding for education is a proactive step that will attract and retain high-quality educators and lay a foundation for future innovation and economic growth.

Addressing the Issue

Addressing the fundamental challenge of low teacher salaries necessitates a comprehensive approach that engages various stakeholders: federal and state governments, school districts, policymakers, and educators. In demonstrating a commitment to prioritize education and teacher welfare, governments should allocate resources to raise teacher salaries and pay equity nationwide.

- To attract and support aspiring teachers, government agencies and private organizations should collaborate to provide grants and scholarships targeting high-demand subjects and

underserved regions. While student loan programs exist, expanding and ensuring educators benefit from them would make teaching more appealing and lucrative.

- Considering regional variations in cost of living, governments might explore subsidizing teacher salaries to reflect the economic realities of different areas. School boards could offer professional development opportunities to communicate an investment in continued education, helping to justify increased salaries and cultivate a more skilled pool of educators.

Conversely, resolving the issue of poorly paid teachers is not easy, and these solutions face multifaceted challenges. The United States currently fails to invest the necessary funding needed to increase teachers' salaries and subsidize the cost-of-living differences due to lack of funds. The sustainability of funding from big and small governments is uncertain, and there is no shortage of competing priorities. Even if the U.S. did achieve pay equity across the country, the issues of educational equality would still exist; some regions would struggle to attract and retain qualified teachers because of non-salary-related factors. Dissatisfaction with salary and a deficit of education funds are just two reasons teachers are burnt out; other factors leading to teacher burnout and turnover are "heavy workloads, poor education landscape of Individual Education Program (IEP) plans, staff shortages, social media issues, safety issues, […], mental health, […], and more" (Peck, 2023, para. 12).

Nearly half of educators, 48 percent, contemplate leaving the education industry due to compensation concerns; in comparison, 42 percent have already made this choice for the same reason (Peck, 2023, para. 29). Following closely as the second most prevalent factor prompting teachers to leave the profession are "expectations," compelling 31 percent to exit and 33 percent to express intentions to do so (para. 29). Well-being emerges as the third leading cause,

influencing 31 percent to consider leaving, with 23 percent already taking that step (para. 29). Leadership-related issues constitute the fourth most prevalent reason, as 30% are planning to leave, and 31 percent have already done so (para. 29). The fifth most cited factor is workplace flexibility, with 26% contemplating leaving and 21% already doing so (para. 29).

While loan forgiveness programs seem like a great idea, they have failed once in recent United States history. “The Supreme Court blocked the [Biden] administration’s student loan forgiveness plan…, rejecting a program aimed at delivering up to $20,000 of relief to millions of borrowers struggling with outstanding debt” (De Vogue & Sneed, 2023, para. 1). Critics would question whether allocating funds for teacher salaries would significantly divert resources from other educational priorities like infrastructure, technology, or student-focused programming.

Lastly, implementing long-term strategies requires careful planning and a sustained commitment. Maintaining momentum and consistency for something that must continue forever is a significant challenge.

Recommendations

The data exists to connect low teacher salaries, decreased educational quality, reduced capacity for innovation, and global competitiveness. However, policymakers seem to need more convincing. Addressing these complex issues and resolving tensions between the bureaucracy influencing policy change and the people it affects requires a coordinated and collaborative effort among the involved agencies and organizations.

Partnerships: Interagency task forces can inform policy-makers; they should include representatives from education departments, the National Science Foundation, the

National Institutes of Health, labor departments, and other invested agencies and industry partners. Collaborations between government agencies and private sector businesses can help connect education and industry and foster alignment between educational programs and the demands of the industries leading innovation. “A variety of stakeholders contribute to the successful implementation of a compensation reform plan, and their support is necessary for its smooth implementation” (Max & Koppich, 2009, p. 3).

Community Engagement: Promoting community involvement is an integral part of securing the support of localities, non-profits, and advocacy organizations, fostering a sense of collective investment in these issues. This collaborative approach encourages a shared commitment and actively involves citizens in policymaking. "Community involvement in schools can help increase access to learning opportunities, boost student retention, promote optimism among teachers, and improve attendance rates of children at school (Daly, 2023, para. 3). Steve Lamb, for the Thought Exchange, reports that "a study of urban elementary schools in Virginia found that community engagement boosted optimism among teachers. And their improved attitude led to improved student achievement” (Lamb, 2023, para. 5). Other ways to promote community engagement are localities running campaigns promoting awareness and continuous dialogue.

Investment in Research and Development: The United States can invest in research and development focusing on education and innovation and forging collaborations between educational research institutions, governments, and organizations dedicated to innovation.

By implementing some or all these strategies, the United States can take steps toward ensuring that teachers receive fair compensation for their critical role in shaping the future of the American workforce and boosting its capacity for innovation and global competitiveness. This effort would reflect a commitment to fostering a thriving educational landscape that benefits both educators and society. Implementing long-term strategies requires careful planning and sustained commitment. Maintaining momentum and consistency for something that must continue forever is a significant challenge.

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