



European
Commission

Evidence-based Solutions to Teacher Shortages

Executive Summary

EEN European
Expert Network
on Economics of Education



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ABOUT EENEE

EENEE is an advisory network of experts working on economics of education and training. The establishment of the network was initiated by the European Commission's Directorate-General for Education and Culture and is funded by the Erasmus+ Programme. PPMI is responsible for the coordination of the EENEE network. More information on EENEE and its deliverables can be found on the network's website www.eenee.eu. For any inquiries, please contact us at: eenee@ppmi.lt.

ABOUT NESET

NESET is an advisory network of experts working on the social dimension of education and training. The European Commission's Directorate-General for Education and Culture initiated the establishment of the network as the successor to NESET II (2015-2018), NESSE (2007-2010) and NESET (2011-2014). The Public Policy and Management Institute (PPMI) is responsible for the administration of the NESET network. For any inquiries please contact us at: info-neset@ppmi.lt.

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Executive summary

Teachers play a vital role in our societies by facilitating the process of students' learning and socialisation, and promoting critical thinking (or, more generally, the so-called '21st-century skills') as well as civic engagement. As noted in a Eurydice report (2021, p. 11), teachers 'play the most important role in making education a fruitful experience', and the COVID-19 pandemic has further highlighted the importance of the profession in ensuring that all students have equal opportunities to access high-quality education (Eurydice, 2021). Yet the teaching profession has experienced a decline in its appeal, attracting fewer young people and losing qualified teachers (Eurydice, 2021). Teacher shortages have become a global challenge with complex and pressing implications that require long-term solutions and consistent investments (Eurydice et al., 2018). In the European Union (EU), teacher shortages are a common issue, particularly in primary and secondary education, with more than half of Member States reporting an acute need for qualified teachers (Eurydice et al., 2018).

Teacher shortages can have significant social implications, with a higher turnover of teachers occurring in schools with a high proportion of disadvantaged students (i.e. learners with a low socio-economic status (SES)). In particular, evidence shows that, in certain countries, more experienced teachers move away from schools with a more disadvantaged student population, such that these schools attract the less experienced (or novice) teachers. This can perpetuate inequalities, as these schools often require more experienced teachers to address the specific needs of their students. In addition, schools with better infrastructure, organisational culture and management tend to exhibit higher teacher retention rates and attract a more privileged student population, which can exacerbate inequalities. Lastly, a more diverse student population can be experienced as more challenging by teachers. Schools with a more diverse ethnic student population and higher concentrations of low-SES and low-performing students are less likely to retain their teachers, and experience greater shortages of teachers (Gambi and De Witte, 2023). This, in turn, reinforces greater inequalities within and between schools. **The unequal distribution of teacher shortages, with disadvantaged schools being more affected, exacerbates educational inequality among students. This underscores the need to address teacher shortages in order to maintain the quality of education and promote educational equity.**

Given the crucial role that teachers play in providing high-quality education, it is imperative for policymakers to take action to address teacher shortages. While policy directions have been identified at both EU and national levels, policymakers are still in the process of determining the best pathways to achieve these policy goals. It is crucial that action should be taken to ensure that students receive the education they need to succeed in an ever-evolving world.

Aim and research questions

This report provides a targeted review of possible interventions that could be implemented to address the problem of not having enough qualified teachers to meet the demand for education in a particular region or subject area. For each of these, we seek to investigate the underlying evidence for the intervention, and evaluate its effectiveness in addressing

teacher shortages. As we will argue, solving teacher shortages requires a comprehensive approach that addresses the multiple factors that contribute to the issue: (1) attracting people to the profession; (2) retaining teachers within the profession; and (3) improving teacher quality. Because teacher shortages are a complex issue, there is no 'silver bullet', and interventions to attract and retain teachers and improve teacher quality are required at various levels, i.e. at the level of individual teachers, of schools, and at system level. Each level of intervention focuses on different aspects of the issue.

The primary objective of this report is to offer evidence-based insights for policymakers seeking to enhance the attraction and retention of teachers and to improve teacher quality. In the report, we focus on compulsory education but do not distinguish between levels of education, as this allows us to provide a more comprehensive review of interventions that could be applied across different educational levels. Teacher shortages can occur at all levels of compulsory education, and addressing the issue through a broad lens provides insights and solutions that can be adapted to various contexts. We address the following research questions:

1. What are the primary and secondary job attributes that affect attraction to the teaching profession and the retention of teachers?
2. What changes to these job attributes are cost-effective in attracting and retaining teachers?
3. What are effective ways to alleviate the social consequences of teacher shortages?
4. How can teacher shortages be mitigated by the smart allocation of resources?

This report is intended for policymakers dealing with national or regional compulsory education systems, and not as a solution for individual schools or districts. Therefore, policymakers need to carefully consider the effectiveness and efficiency of any of the solutions proposed, and ensure that they are appropriate for the needs of their education system. At this point, it is important to recognise that what might work at the level of an individual school might not be effective or efficient when applied across an education system as a whole. This is known as the 'fallacy of composition', whereby an assumption is made that what works for one part of the system will work for the whole.

Methodology

This study adopts the approach of a targeted literature review. For each intervention at teacher, school and system level, we proceed in two steps. First, we discuss the rationale behind the intervention, and explain the reasons why the intervention is hypothesised to work. To this end, the report relies on policy documents, EU publications, country reports and scientific literature. This step provides a broader understanding of the intervention and how it is expected to address the problem of teacher shortages. The second step involves reviewing the available scientific evidence about the intervention and evaluating whether the intervention is effective or cost-effective. Lastly, it is important to note that there is a lack of evidence regarding the costs of interventions. As a result, expert judgments are made regarding these costs. Thus, we provide an estimate of the costs of implementing the relevant interventions, and their potential impact on the education system.

Policy conclusions

Overall, the report makes clear the overall lack of evidence regarding some of the less obvious and potentially interesting solutions to the problem of teacher shortages. These

include promoting the use of hybrid teachers, facilitating task differentiation, or introducing a multi-level career structure. More research into the effectiveness of these approaches is needed. In line with recommendation of the European Commission report “Investing in our future: Quality investment in education and training” (2022), we suggest experimenting with these measures using small-scale randomised, controlled trials (RCTs), before implementing them on larger scale.

Teacher-level interventions

Chapter 2 focuses on interventions **at teacher level**, which aim to attract and retain high-quality teachers by offering financial incentives such as salary increases and performance-based pay, reducing teachers’ workload, increasing job security and professional autonomy, and addressing beliefs about and the promotion of the teaching career. Overall, our findings reveal that there is strong base of evidence that a few such interventions are highly effective. For a majority of interventions, however, the evidence base is judged to be low-to-medium, while the expected effectiveness is similarly considered low-to-medium. Focusing on the most promising interventions (i.e. those with at least a medium evidence base and medium effectiveness), we can make four recommendations regarding teacher-level interventions.

First, we recommend the use of **targeted financial incentives**, as these appear promising with respect to cost-effectiveness, especially in promoting the retention of teachers in areas of high need. Such incentives include bonuses, salary differentials and deferred retirement plans. Evidence from a policy intervention in Oslo, Norway, shows that a wage premium of around 10% paid to retain teachers in schools with high levels of vacancies (with the premium being lost if a teacher moves to a low-vacancy school) reduces the probability of teachers voluntarily quitting their jobs by approximately 6 percentage points. Furthermore, financial incentives can be an effective tool to promote the retention of teachers in disadvantaged schools, and consequently to foster equity in education. On the basis of a high base of evidence, we rate financial incentives for teachers in disadvantaged schools and hard-to-staff subjects as highly effective, at a medium level of cost. Conversely, we argue that financial incentives for retired teachers or career switchers are potentially less cost-effective, with only a medium-sized evidence base.

Second, based on the available evidence and literature, we recommend closing the salary gap between teachers and similarly educated workers. An **across-the-board salary increase** could be an effective policy measure to tackle teacher shortages by improving both the attractiveness of the profession and the retention of in-service teachers. However, while ‘closing the salary gap with similarly tertiary-educated workers’ is rated as highly effective, it comes at very high costs, based on a medium-sized base of evidence. Across-the-board salary increases do have the potential positive side effect of increasing diversity in the teaching profession with respect to gender and ethnicity, as well as attracting more high-quality teachers by enhancing the profession’s status. However, the evidence for these potential positive side effects is low.

Third, we recommend focusing on combined interventions such as **an across-the-board salary increase, compensated for by a proportional increase in class sizes**. The available evidence suggests that this would be a cost-effective way to increase the attractiveness of the teaching profession, while being budget-neutral. Although this policy has the potential side effect of lower learning gains due to larger classes, higher salaries

might serve to attract higher quality teachers (which is a more important input into educational quality than class sizes). We rate this as a policy measure of medium to low effectiveness with no costs, based on a medium-to-low base of evidence.

Lastly, we recommend exploring the use of teaching assistants to reduce teachers' workload. Teaching assistants can carry out some tasks at a similar level of quality to teachers, but at a lower cost. One particularly promising avenue to reduce teachers' workload while increasing educational quality is the provision of small-scale tutoring by less qualified teaching personnel.

School-level interventions

Chapter 3 of the report highlights interventions that can be implemented **at school level**. These interventions aim to create a supportive environment for teachers by selecting suitable candidates, implementing adequate HR policies, providing autonomy over teacher remuneration, and developing strong school leadership. In addition, programmes for the induction, support and mentoring of new teachers, as well as professional development opportunities and networked schools, can create a positive work environment for teachers and reduce teacher shortages.

The chapter underscores that supporting and valuing teachers as professionals is important in addressing teacher shortages. It argues that well-governed schools attract and retain high-quality teachers, who feel valued and supported by the school community. Overall, we observe that most interventions have only a low evidence base and a low expected impact on attracting and retaining teachers. Focusing on interventions with at least a medium base of evidence and medium effectiveness, we make the following two recommendations.

First, we recommend **implementing longer induction and mentoring programmes, of at least two years**. Induction programmes for new teachers lead to higher teacher retention rates, faster professional development, and enhanced student learning outcomes. The most successful mentorship programmes are those that offer same-subject mentors, regular collaboration and external networking. In addition, providing mentor training and allowing partial release from regular duties can improve the teaching practice of new teachers through the provision of personalised coaching and support.

Second, Chapter 3 also suggests that **stimulating continuous professional development** could be an effective means to increase teacher retention. Professional development activities should have a high content focus, involve active learning, have a sustained duration, include collective participation, and offer coherence and ownership. While research on the area remains limited, it also appears that teacher collaboration, e.g. in professional learning communities, can result in the increased retention of teachers.

System-level interventions

Chapter 4 focuses on **system-level interventions** to mitigate teacher shortages. Such interventions aim to address the broader systemic issues that contribute to teacher shortages. These measures include promoting career diversification via flexible national careers frameworks, task differentiation, enabling mobility between subjects and educational levels, and promoting the use of hybrid teachers (i.e. combining a part-time

job as a teacher with a different part-time job). Such interventions require the involvement of policymakers, government officials and educational leaders in the implementation of effective policies and programmes to mitigate teacher shortages. The chapter goes on to examine the effects of strengthening initial teacher education (ITE) in specific subjects, promoting alternative pathways into teaching, and stimulating the use of ICT and computer-assisted learning. From this analysis, three policy conclusions are drawn.

First, we recommend the promotion of existing initial teacher education programmes. ITE provides a valuable path into teaching, and **the quality of ITE programmes** contributes to the attractiveness of the teaching profession. Thus, in debating whether to professionalise or deregulate teacher education, countries should carefully consider the evidence and retention rates among ITE-educated teachers versus those who receive training via an alternative route into teaching.

Second, countries facing teacher shortages could make use of **alternative pathways** to attract potential teachers, especially in areas of high need, as little difference can be discerned in terms student achievement between teachers who are traditionally trained, versus those who are trained by alternative routes. However, teachers trained via alternative pathways are more likely to leave their school when compared with traditionally trained teachers. Therefore, to combat these higher attrition rates among alternatively trained teachers, recruitment and retaining incentives must be balanced.

Third, we recommend improving the **use of computer-assisted learning (CAL)** in education. In conditions where there is adequate hardware and software, as well as professional teacher development and ongoing technical support, and where CAL is well integrated into the curriculum, its use can increase the efficiency of education by providing teachers with access to a wide range of educational resources and tools, and reducing teachers' workload by automating administrative tasks. Although CAL can be beneficial in supporting student learning in situations where direct teacher instruction is unavailable, it should only be used as a temporary solution to address teacher shortages. This is because teachers have a critical role to play in promoting students' social and emotional development, as well as providing guidance and support that cannot be substituted using CAL.

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