# Trésor-Economics

Direction générale du Trésor

The Economic Impact of the Performance Levels of the French Education System

Vincent Barde and Blaise Leclair

- The academic performance levels of students in France are declining over time and in comparison with other countries. National assessments show a slump in academic achievement in mathematics and French over the past 30 years. A survey by the Programme for International Student Assessment (PISA) confirms this decline, which is faster than in other countries, although performance levels in France remain close to the OECD average and, out of OECD countries, are among the most strongly correlated with social background and reveal significant gender gaps.

- Reversing the trend in educational performance levels would be a source of long-term growth for the French economy. Indeed, a large proportion of the productivity gains in developed economies can be explained by the accumulation of human capital, mainly acquired during initial training. Reducing gender and social inequality would increase the pool of potential innovators and skilled workers.

- Assessment of education policies is essential, to identify the most effective actions and optimise their socio-economic impact. In particular, the literature shows that increasing the teacher-student ratio has a significant impact on academic performance levels. Teacher training and in-service professional development, as well as the appropriate and judicious use of digital resources, which are still underutilised in France, can also have a positive effect on learning.

- Additional resources have been allocated to the education system in recent years (an 11% increase in domestic education expenditure in constant euros per student in primary education between 2017 and 2023). Halving of class sizes has been gradually implemented since the start of the 2017 academic year for students in the first and second years of primary school and in the final year of nursery school in priority education networks, to target students from disadvantaged social backgrounds in the acquisition of core knowledge.

Change in the average score for mathematical literacy in France for the period 2003-2022 according to the PISA survey
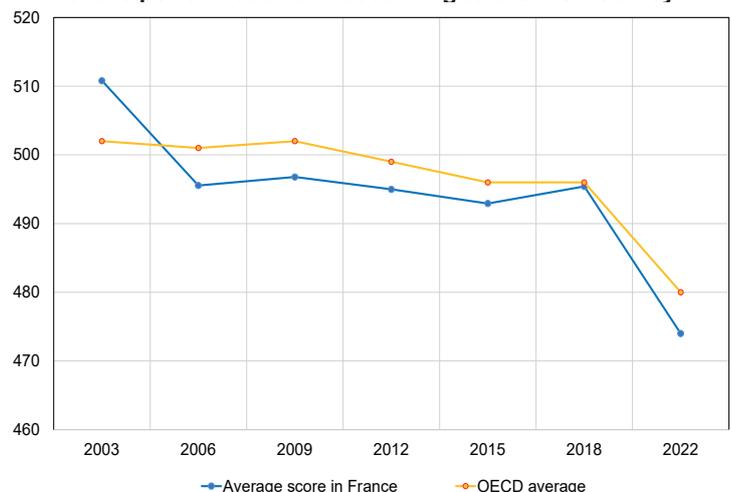
Sources: Directorate of Evaluation, Forecasting and Performance Monitoring (DEPP); OECD, PISA 2022 Results (Volume I).

How to read this chart: In the PISA 2022 survey, the average score in mathematical literacy for students in France is 474 points, compared with the OECD average of 480 points.

Note: the OECD average covers the 23 countries for which data is available for every year in the period.

1. The overall performance level of the French education system is worsening

1.1 The academic achievement of French students is declining, particularly in mathematics, and is in line with the average for other countries

Students' levels in different subjects are measured in France and internationally, to observe performance in a given test and to analyse trends (see Box 1).

The *Lire-Écrire-Compter* (LEC) survey, which assesses the performance levels of a sample of students in the final year of primary school in reading, spelling and arithmetic, has been used to analyse changes in academic achievement since 1987. In mathematics, the median level measured by the LEC survey in 1987 was only achieved by 7% of students in 2017, and the level achieved by the top 10% in 1987 was only achieved by 1% of students in 2017. In addition, 56% of students were below the level reached by the 10% lowest performers in 1987.[1] The decline in average levels highlighted by the survey[2] is in line with a long-term trend measured by all assessment programmes, both national and international (CEDRE,[3] PISA[4] and TIMSS,[5] see Chart 1).[6]

In French, the decline is more pronounced for students with the poorest reading skills: 21% of students in 2007 had a lower level than the 10% with the lowest reading skills in 1987,[7] while 8% achieved the level attained by the 10% with the highest skills in 1987. In contrast, the decline in spelling results is widespread: the proportion of students making two or fewer errors in a dictation

had become marginal in 2021 at 2% (compared with 13% in 1987), while the proportion of students making 25 or more errors (out of 67 words) had increased fourfold in 2021 (28% compared with 7% in 1987).[8]

Chart 1: Trend in mathematics results for students in France according to different assessments
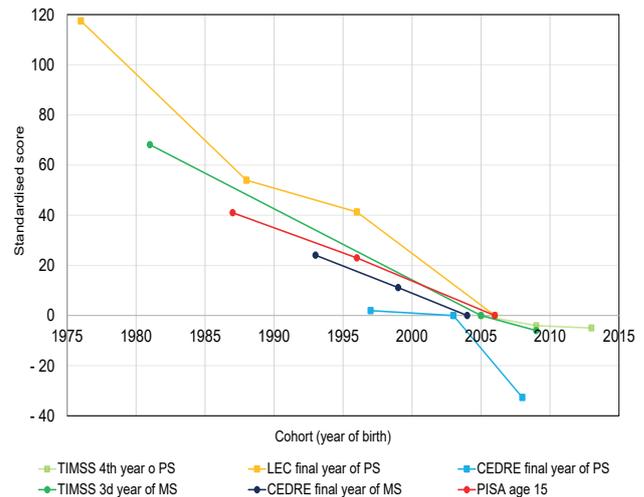
Source: DEPP (2022), "L'état de l'École 2022", no. 32 (in French only).

How to read this chart: Students born in 1976 achieved a standardised score of 120% in the LEC survey on mathematics in the final year of primary school.

Note: To compare trends, a standardised score is calculated to identify the differences between each year and a reference year (2005 in this case). More specifically, for each programme, the standardised score for a given year represents the difference between the average score for that year and the average score for the year closest to 2005, expressed as a percentage of the standard deviation from 2005.

---

(1) Chabanon L. and Pastor J. (2019), "L'évolution des performances en calcul des élèves de CM2 à trente ans d'intervalle 1987-2017", DEPP, *Note d'information*, no. 19.08 (in French only).

(2) −1.2 standard deviations between the 1976 and 2004 cohorts.

(3) −0.35 standard deviations between the 1993 and 2004 cohorts of students in the final year of middle school and between the 1997 and 2008 cohorts of students in the final year of primary school.

(4) Students aged 15, −0.41 standard deviations between 1987 and 2006.

(5) −0.74 standard deviations between the 1981 and 2009 cohorts of students in the third year of middle school and -0.05 standard deviation between the 2005 and 2013 cohorts of students in the fourth year of primary school.

(6) The various measurements of academic performance are based solely on students in France. Martin R., Renault T. and Roux B. (2022), "Baisse de la productivité en France: échec en 'maths'?", CAE, *Focus*, no. 91-2022 (in French only).

(7) Rocher R. (2008), "Lire, écrire, compter: les performances des élèves de CM2 à vingt ans d'intervalle, 1987-2007", DEPP, *Note d'information*, no. 08.38 (in French only).

(8) The 1987 LEC dictation test was repeated as part of the CEDRE assessment. Eteve Y., Nghiem X. and Chaaya C. (2022), "Les performances en orthographe des élèves de CM2 toujours en baisse, mais de manière moins marquée en 2021", DEPP, *Note d'information*, no. 22.37 (in French only).

> ## Box 1: Harmonised measurement of student performance
>
> To ensure that studies are comparable, differences in average performance levels are standardised using the standard deviation as the unit of comparison, measuring the distribution of students' scores around the mean. Generally (especially if it is assumed that the scores follow a normal distribution), approximately two-thirds of the students' scores are within one standard deviation of the mean score (above or below). A difference in performance of 0.2 standard deviations or more (i.e. 20% of one standard deviation or more) is generally considered significant in the empirical literature.[a]

a. Kraft M. (2020), "Interpreting Effect Sizes of Education Interventions", *Educational Researcher*.

When compared internationally, French students' scores in the PISA survey have declined more than in the rest of the OECD since 2003, although all countries are following a similar trend. While the COVID-19 pandemic partly explains these results between the 2018 and 2022 surveys, the decline had already set in beforehand. In 2022, the average score in France had fallen by 37 points in mathematics, 24 points in scientific literacy and 22 points in reading comprehension compared with 2003, while the OECD averages were 21 points, 15 points and 20 points respectively.

The reading comprehension of students in France has been at the OECD average level in recent surveys, and generally below average in mathematics and science. In reading comprehension, French results are in line with the international average in the PISA 2022 survey of students aged 15 (474 points compared with an OECD average of 476 points), and slightly below the European average for students in the fourth year of primary school in the PIRLS survey (514 points compared with an EU average of 527 points).[9] In mathematics and science, while French students' scores in the PISA 2022 survey[10] do not differ significantly from the OECD average, France ranks below the international average of participating EU and OECD countries in the TIMSS survey for students in the fourth year of primary school[11] and the third year of middle school.[12]

1.2 Social background has a significant influence on students' performance levels and this increases in secondary school

Compared with other countries, France is characterised by the greater impact of social background on academic performance levels. France has one of the largest gaps between advantaged and disadvantaged students in the PISA score for mathematics and reading comprehension (1.1 standard deviations compared with 0.9 standard deviations in the OECD in both cases).

Performance gaps based on social background can be observed at all levels in the school system. In national surveys, the gap is slightly higher in mathematics as from the first year of middle school (see Chart 2).[13] On entering secondary education, the least advantaged 20% of students have an average score that is 63 points lower (i.e. 1.3 standard deviations lower) than the most advantaged 20% of students. The gap is slightly smaller for French (58 points, or 1.2 standard deviations). Social inequality in skills becomes more pronounced in mathematics at secondary school, with students from privileged social backgrounds progressing by one standard deviation from the first to final years of middle school, compared with 0.8 standard deviations for students from disadvantaged social backgrounds.[14]

(9) Conceicao P., Desclaux J. and Lacroix A. (2023), "Pirls 2021: la France stabilise ses résultats contrairement aux autres pays européens majoritairement en baisse", DEPP, *Note d'information*, no. 23.21 (in French only).
(10) PISA 2022 Results (Volume I), "The State of Learning and Equity in Education".
(11) Cioldi I. and Raffy G. (2024), "Timss 2023 en CM1: les résultats en mathématiques et en sciences restent stables en France, sous la moyenne européenne, avec une hausse des inégalités entre filles et garçons", DEPP, *Note d'information*, no. 24.47 (in French only).
(12) Lacroix A., Philippe C. and Salles F. (2024), "Timss 2023 en quatrième pour les mathématiques: des résultats stables en France et un accroissement des écarts de performance entre les élèves", DEPP, *Note d'information,* no. 24.48 (in French only).
(13) DEPP (2025), "L'état de l'École 2025", no. 35 (in French only).
(14) Andreu S. et al. (2024), "Test de positionnement de début de seconde 2024 – Premiers résultats", DEPP, Série Études, *Document de travail*, no. 2024-E17 (in French only).

Chart 2: Average scores of students starting secondary education according to their parents' social background at the start of the 2023-24 academic year
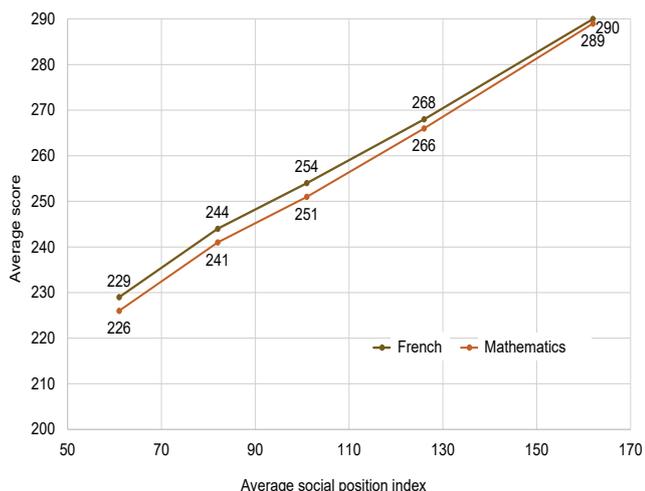
Source: DEPP (2025), "L'état de l'École 2025", no. 35 (in French only).

How to read this chart: Among the 20% of students with the least advantaged social background in the first year of middle school, the average social position index is 61. Their average score on starting secondary education is 229 in French and 226 in mathematics. Each point corresponds to a quintile of the social position index distribution, which summarises the socio-economic and cultural situations of students.

1.3 Gender differences, in favour of boys in mathematics and girls in French, become more pronounced throughout primary school

Boys perform better in mathematics: the gender gap in mathematics, initially in favour of girls, reverses in the middle of the first year of primary school and widens in favour of boys in primary education.[15] This gap widens with each start-of-year assessment, reaching 32 points in the final year of primary school (see Chart 3), then narrows somewhat in secondary school, where boys' results remain better but the gaps are smaller (+21 points in the first year of middle school and the first year of high school, +18 points in the third year of middle school).

This gap in favour of boys is not specific to France; it exists in many other countries.[16] However, the difference is particularly significant in France in the fourth year of primary school, with the gap in mathematics scores between girls and boys being the largest (0.3 standard deviations) among the 29 OECD countries participating in TIMSS 2023.[17] In the PISA 2022 survey at age 15, the gender gap in France is in line with the OECD average. Boys outperform girls in 55 countries (of the 92 countries taking part), including Germany, Italy, Spain, the United Kingdom and the United States.

In French, on the other hand, girls perform better than boys from primary school onwards. The results of international assessments confirm these gaps, with girls achieving better results in reading comprehension, with a PISA score 0.2 standard deviations higher than for boys. In national surveys, girls also achieve higher results in French from the first year of primary school onwards and maintain this lead at secondary school.[18]

Chart 3: Gender gap in mathematics scores in recent national and international assessments
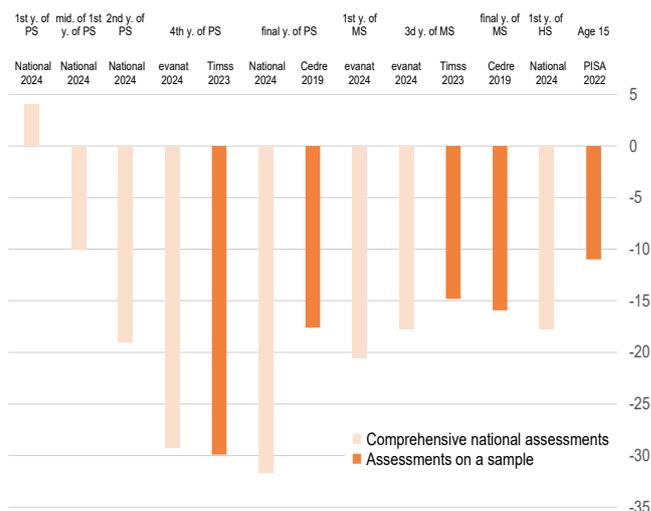
Source: DEPP (2025), "L'état de l'École 2025", no. 35 (in French only).

How to read this chart: Among the 20% of students with the least advantaged social background in the first year of middle school, the average social position index is 61. Their average score on starting secondary education is 229 in French and 226 in mathematics. Each point corresponds to a quintile of the social position index distribution, which summarises the socio-economic and cultural situations of students.

(15) Eteve Y., Garnero M. and Paillet V. (2025), "Évolution des écarts de performances entre filles et garçons en mathématiques, au fil du temps et de la scolarité", DEPP, *Note d'information*, no. 25-04 (in French only).

(16) The fact that the gender performance gap in TIMSS mathematics assessments is more pronounced in the fourth year of primary school than in the third year of middle school is also observed in many other countries.

(17) Cioldi I. and Raffy G. (2024), "Timss 2023 en CM1: les résultats en mathématiques et en sciences restent stables en France, sous la moyenne européenne, avec une hausse des inégalités entre filles et garçons", DEPP, *Note d'information*, no. 24.47 (in French only).

(18) DEPP (2025), "L'état de l'École 2025", no. 35 (in French only).

2. Education is a crucial factor for productivity and economic growth

2.1 The slowdown in business activity and productivity can be partly explained by the loss of momentum in developing human capital

Human capital development is estimated to have contributed to three-quarters of the productivity gains in France between 1971 and 2018.[19] This trend was largely driven by enrolment in nursery school, increasing success rates in the baccalaureate and improved access to higher education. School enrolment at age three rose from 60% in 1970 to nearly 100% in the 1990s, resulting in fewer repeated years, improved academic results, higher secondary school graduation rates and higher salaries in adulthood.[20]

However, productivity growth fell from over 4% in the 1970s to less than 1% in the 2010s, and productivity even declined in France between 2019 and 2023 against a backdrop of rising employment rates.[21] Reduced accumulation of human capital could explain 59% of the decline in productivity gains between 2000 and 2020.[22] This slowdown is linked to a lesser increase in the level of initial training of younger generations. The proportion of secondary school graduates in the working population in France increased by 31 percentage points between 1975 and 2000 (from 37% to 68%), and that of higher education graduates by 15 percentage points (from 10% to 25%), before slowing down in recent years: up 14 percentage points for secondary school graduates (from 68% to 82%) and up 15 percentage points (from 25% to 40%) for higher education graduates between 2000 and 2020.[23]

While the extensive margin (school enrolment, length of schooling) now offers more moderate potential for progress, the intensive margin (student performance) appears, given the decline in student achievement in France, to be the main channel for potential productivity gains linked to human capital. For example, the OECD estimates that an increase in the average PISA test score in France to reach the average of the ten OECD countries with the highest performance levels in reading comprehension, scientific literacy and mathematical literacy would ultimately increase productivity by 2.7%.[24]

The innovation-related component of productivity is a key growth factor as a country approaches the technological frontier. Consequently, investment in higher education has a more significant impact on growth in countries located near the technological frontier, as research is a human capital-intensive activity.[25] Better educated individuals are more likely to develop innovative ideas and create successful businesses, optimising available resources to contribute to economic growth.

2.2 Mastery of scientific and socio-behavioural skills offers high economic returns

Beyond productivity and growth targets, the dual green and digital transition requires innovation and the reallocation of skills,[26] which depend on the quality of the education system. Highly trained workers are more able to use existing technologies more effectively and adopt new methods of organisation or production.[27]

---

(19) Aussilloux V., Bruneau C., Girard P. L. & Mavridis D. (2020), "Le rôle du capital humain dans le ralentissement de la productivité en France", France Stratégie, *Note de synthèse* (in French – summary in English).

(20) Dumas C. & Lefranc A. (2010), "Early schooling and later outcomes: Evidence from pre-school extension in France", *THEMA*, no. 2010-07, Université de Cergy-Pontoise.

(21) COR (2023), "Les évolutions de la productivité du travail, tendances passées et récentes", *Document de travail* (in French only).

(22) Aussilloux et al. (2020), op. cit.

(23) Ibid.

(24) OECD Economic Surveys: France (2024).

(25) Aghion P. and Howitt P. (2009), "The Economics of Growth", Cambridge, *MIT Press*.

(26) DG Trésor (2025), "Les enjeux économiques de la transition vers la neutralité carbone" (in French – Executive Summary in English).

(27) Schoemaker P. J. & Tetlock P. E. (2017), "Building a more intelligent enterprise", *MIT Sloan Management Review*.

In particular, mathematical and behavioural skills[28] are becoming increasingly important in both existing and new professions, making them all the more necessary and valuable for individuals. According to the French Council of Economic Analysis (CAE), the proportion of occupations requiring high mathematical and socio-behavioural skills increased by 9.2 percentage points between 1982 and 2020.[29]

The link between skills and vocational integration is significant. A difference of one standard deviation in overall scores at the end of secondary education is associated with an 18% higher starting salary.[30] The literature highlights a particularly positive effect of numeracy on salaries and employability, and the wage return on a 10-point improvement in individual numeracy skills (on a scale of 0 to 100) is estimated at 3.7%, compared with 2.7% for an equivalent improvement in literacy skills and 2.5% for an additional year of professional experience.[31]

At macroeconomic level, the CAE also estimated that catching up with Germany's PISA score in mathematics would lead to a productivity gain of 0.6 to 1.4% in France over 15 years.[32] The effect is more significant in sectors exposed to international competition and sensitive to productivity variations. Across a panel of countries, the impact of improved mathematical skills (an increase of one standard deviation in PISA scores over 10 years) is also associated with a three to four percentage point increase in the proportion of industrial manufacturing jobs out of total jobs over the following seven years.

The impact of education on productivity can vary considerably depending on the type of training undertaken. As an example, underinvestment in digital skills and technologies could explain the slowdown in productivity and the relative decline of France compared with the United States.[33] Acquiring general skills, i.e. not specific to a particular profession, also allows for greater career flexibility, which translates into better salary prospects.[34]

Socio-behavioural skills thus generate a "double dividend"[35] by improving the ability to learn in an academic setting and then to move into and thrive in a professional environment. Acquiring these skills in childhood correlates with better academic results, but also with higher self-esteem and greater resilience in the face of difficulties, which has long-term positive effects.[36] In the labour market, demand for these skills is growing.[37] The wage return on socio-behavioural skills is reported to have more than doubled between 1980 and 2012 in the United States,[38] notably by reducing the cost of coordination within companies.

2.3 Reducing social and gender inequality in education remains a major driver for growth and innovation

The proportion of women in STEM (science, technology, engineering and mathematics) higher education is low and has remained stable at below 30% for many years in France. This can be explained firstly by a lower level of interest in these subjects for students of equal ability, resulting from gender

(28) These skills include, for example, managing emotions, perseverance, critical thinking, the ability to collaborate, and the ability to adapt and solve problems.
(29) Guadalupe M., Jaravel X., Philippon T. and Sraer D. (2022), "Building on Human Capital to Restore Productivity Growth", CAE, *Les notes du conseil d'analyse économique*, no. 75.
(30) Murat F. (2024), "L'insertion professionnelle des jeunes: Influence du parcours scolaire et des compétences générales", DEPP, *Éducation & Formations*, no. 107 (in French only).
(31) Branche-Seigeot A. (2013), "La valorisation des compétences de base sur le marché du travail français", *Recherches en éducation,* HS5 (in French only).
(32) Martin R., Renault T. and Roux B. (2022), op. cit.
(33) Bock S., Gelman P. (2024), "Le décrochage productif français et la sous-performance des secteurs intensifs en TIC", OFCE (in French only).
(34) Goldin C., Katz L.F. (2009), *The race between education and technology,* Harvard University Press.
(35) Algan Y., Huillery E., Prost C. (2018), "Trust, Cooperation and Autonomy: Towards a 21st Century School", CAE, *Les notes du conseil d'analyse économique*, no. 48.
(36) Sorrenti G., Zolit U., Ribeaud D., Eisner M. (2025), "The Causal Impact of Socio-Emotional Skills Training on Educational Success", *The Review of Economic Studies*.
(37) OECD (2021), "Beyond Academic Learning: First Results from the Survey of Social and Emotional Skills".
(38) Deming D.J. (2017), "The growing importance of social skills in the labor market", *The Quarterly Journal of Economics.*

stereotypes associated with mathematics.[39] The early onset of gender performance inequality, and the comparative advantages that stem from them, can also accentuate differences in academic and professional choices.[40] This under-representation leads to gender disparities in access to careers in innovation. Between 2019 and 2023, only 11% of patent applicants to the French National Institute of Industrial Property (INPI) were women. It also has an impact on the labour market, with women being under-represented in industry, which has a negative effect on business productivity.[41] All other factors being equal (business sector, capital intensity, geographical area, size and age of the business), companies that are further from the average in terms of gender diversity are less productive.[42]

As scientific skills command higher salaries, encouraging girls to choose these subjects at secondary school and then to pursue STEM careers would help to close part of the persistent pay gap in the labour market.[43] Lastly, this would meet the growing need for scientific skills by galvanising a new pool of talent that would increase the current number of graduates. The Draghi report[44] highlights the fact that the current number of STEM graduates in the EU (22 per 1,000 individuals in 2023) remains insufficient to meet skill requirements.

The same problem of unequal opportunities arises with the under-representation of students from disadvantaged social backgrounds among research workers, which is the result of highly selective educational pathways. The likelihood of a person being innovative is strongly influenced by family and social backgrounds.[45] Innovators are not representative of society as a whole, and innovation is skewed in favour of affluent households.

Lastly, social diversity helps improve the social and behavioural skills of all students, contributing to their productivity and providing practical preparation for the demands of working life. In high schools, the zoning and allocation methods trialled by Affelnet in Paris have reduced segregation in schools by 30 to 40%.[46] In secondary schools, experiments with social diversity (such as changing school catchment areas and introducing appealing options in disadvantaged schools) are associated with better social integration, greater openness to others and solidarity among students, greater cooperation and improved tolerance of diversity among disadvantaged students.[47] More broadly, the literature shows that students from disadvantaged backgrounds benefit from interacting with peers from more advantaged backgrounds and have access to better long-term economic prospects, while the performance of advantaged students is not negatively affected.[48]

(39) IGF (2025), "Filles et mathématiques: lutter contre les stéréotypes, ouvrir le champ des possibles" (in French only).
(40) Breda T., Napp C. (2019), "Girls' comparative advantage in reading can largely explain the gender gap in math-related fields", PNAS Proceedings of the National Academy of Sciences of the United States of America.
(41) Challe L. et al. (2021), "Explorer les liens entre mixité et productivité dans les entreprises", France Stratégie, *Note de synthèse* (in French only).
(42) Ibid.
(43) Chamki A., Toutlemonde F. (2015), "Ségrégation professionnelle et écarts de salaires femmes-hommes", *DARES analyses*, no. 082 (in French only).
(44) The number of engineering jobs created is expected to exceed two million in the EU by 2035, the highest number of any profession. Draghi (2024), "The future of European competitiveness".
(45) Bell A., Chetty R., Jaravel X., Petkova N. & Van Reenen J. (2019), "Who becomes an inventor in America? The importance of exposure to innovation", *The Quarterly Journal of Economics*.
(46) Charousset P., Grenet J. (2023), "La réforme d'Affelnet-lycée à Paris: une mixité sociale et scolaire en forte progression dans les lycées publics", Note no. 88, IPP (in French only).
(47) Grenet J., Huillery É. & Souidi Y. (2023), "Mixité sociale au collège: premiers résultats des expérimentations menées en France", *Note CSEN*, no. 9 (in French only).
(48) Chetty R., Hendren N. & Katz L. (2016), "The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment", *American Economic Review*.

3. Adapting education policies based on assessment of their effects is crucial to effectively strengthening human capital

3.1 The teacher-student ratio is a key factor in improving academic performance

The increase in the teacher-student ratio as part of the halving of class sizes in priority education areas since 2017 has been a major factor in improving academic performance and reducing social inequality. The literature highlights the significant effect of smaller class sizes in primary education. In general, the improvement in results is 1.5% to 2.5% of a standard deviation for each reduction in class size by one student, with a more significant impact for students from disadvantaged social backgrounds.[49] Studies on the effects of class size in secondary education tend to show less significant effects, in the order of 1% of a standard deviation.[50]

The Directorate of Evaluation, Forecasting and Performance Monitoring's (DEPP) assessment of halving class sizes in primary schools has demonstrated its effectiveness, with a significant impact on reducing educational inequality. In priority education areas, there is an average gain of 1.6% of a standard deviation at the end of the first year of primary school per student-reduction in class size. This corresponds to 16% of the gap in French between students enrolled in REP+ priority education and other students at the start of primary education, and 38% of the gap in mathematics.[51] The positive impact is most noticeable in the first year of primary school and persists in the second year but without any additional effect. Based

on these assessments of the impact on skills, the CAE estimates that halving primary school class sizes would have a neutral effect on public finances in the long term.[52] It would eventually generate tax revenue through the higher future salaries of these students, covering the direct cost of implementing the policy, i.e. the cost of paying for additional teachers.

Enhanced support through programmes targeting disadvantaged students, such as *internats d'excellence* (boarding schools for excellence), also has a positive impact on academic performance. Launched in 2008, *internats d'excellence* are middle and high schools where students can board and benefit from personalised educational support. Initially, the scheme was primarily aimed at young people living in neighbourhoods prioritised as part of a city's urban policy. The evaluation of the first *internat d'excellence* in Sourdun showed a twofold reduction in the proportion of students leaving the education system without a qualification (falling from 27% to 13%) and a 60% increase in the higher education graduation rate for former students (rising from 27% to 43%).[53] In addition, the CAE's work highlights the potential long-term effectiveness of the programme. The assessment of the first *internat d'excellence* suggests that the benefits outweigh the cost by a factor of 4.5 (see Box 2), due to the theoretical public funding cost (estimated at €34,168 per student) being lower than the higher salaries earned during working life.

(49) Grenet J., Landais C. (2025), "Education: how to better target public spending", CAE, *Les notes du conseil d'analyse économique,* no. 84.

(50) Piketty T. and Valdenaire M. (2006), "L'impact de la taille des classes sur la réussite scolaire dans les écoles, collèges et lycées français, estimations à partir du panel primaire 1997 et du panel secondaire 1995", DEPP, *Les Dossiers,* no. 173 (in French only).

(51) Andreu S. et al. (2021), "Évaluation de l'impact de la réduction de la taille des classes de CP et de CE1 en REP+ sur les résultats des élèves et les pratiques des enseignants", DEPP, *Document de travail,* no. 2021-E04 (in French only).

(52) Grenet J., Landais C. (2025), op. cit.

(53) Behaghel L., de Chaisemartin C. and Gurgand M. (2024), "Breaking the Barriers to Higher Education: The Long-Term Benefits of a Boarding School for Disadvantaged Students", *Working Paper.*

3.2 Wage levels have a positive effect on the attractiveness of the teaching profession, and teacher training has a positive impact on student results

The decline in the number of candidates for competitive examinations for teaching positions highlights the loss of the profession's attractiveness. The coverage rate (i.e. the ratio of the number of candidates admitted to the number of vacancies, expressed as a percentage) has decreased. The number of candidates admitted through competitive examination represented 99% of the number of vacancies in 2005, 90% in 2011 and 88% in 2024 (see Chart 4).[54] However, these difficulties are concentrated in certain regions (the unfilled vacancies are mainly in Créteil, Versailles, French Guiana and Mayotte) and in certain subjects in secondary education (coverage rate of 74% in mathematics and 67% in classical literature).[55]

Chart 4: Changes in the application rate and coverage rate for competitive examinations for teaching staff in the state school system
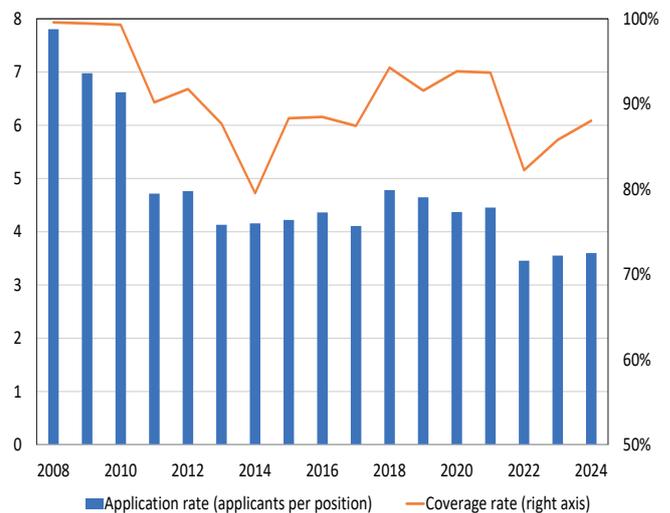
Source: DEPP, Série chronologiques de données statistiques sur le système éducatif.

How to read this chart: In 2024, there were 3.6 times more applicants than vacancies, with 88% of vacancies being ultimately filled.

---

(54) Ibid.
(55) Ministry for Primary and Secondary Education (2025), Concours enseignants de la session 2025 (in French only).

Teachers' compensation is a factor that makes the profession more attractive, helps to motivate current teachers, and attracts more competent people to the profession.[56] In France, wage hikes in the national education system amounted to a total of €7.7bn between 2020 and 2024, and were accompanied by faster grade progression. The doubling of the annual allowance for assignment to a REP+ school (from €2,312 in 2017 to €4,646 in 2019) has had a positive impact on teacher mobility, increasing the proportion of REP+ schools in first mobility choices by 1.4 percentage points, according to a study of the Montpellier school district.[57] However, the academic literature[58] does not demonstrate a systematic and significant relationship between average teachers' wages and students' results, particularly in mathematics and science.

The attractiveness of the profession may also depend on other factors, as shown by the example of Germany, which is experiencing a teacher recruitment crisis despite the fact that teachers' salaries there are among the highest in the OECD and close to those of workers with a similar level of education.[59] It is thus essential to address factors other than pay, such as working conditions and career management, while not totally neglecting it.

Initial and in-service teacher training is a determining factor in their job satisfaction and teaching performance levels. Teachers in France report that they are relatively less well prepared for teaching than teachers in other countries. In France, 65% of teachers believe there is not a good balance between the theoretical and practical aspects of teaching in their initial training, compared with an EU average of 47%.[60] Peer training appears to be particularly effective and could be developed further. For example, in 2010-12, the Ministry for Primary and Secondary Education conducted a project to pool practices based on the use of student assessment results by teachers to improve teaching methods.[61] The assessment of this project highlighted positive effects: students of teachers who had taken this specific training saw their results improve by more than 0.13 standard deviations over the course of the year.

3.3 Teachers' adoption of digital resources is essential for their successful integration into the classroom

Digital resources remain underutilised in France. Less than 10% of teachers in France reported being able to "greatly" encourage student learning through the use of digital technology in 2018, compared with an average of one-third of teachers in other European countries.[62] In high schools, the lack of trained teachers has limited the rollout of the "digital and computer science" (NSI) speciality course in the final year of general secondary education, which is often taught by teachers from other disciplines.[63]

(56) Fullard J. (2021), "Relative wages and pupil performance, evidence from TIMSS", *ISER Working Paper*.

(57) Study on the preferences of secondary school teachers assigned to a state school in the Montpellier school district. Silhol J. and Wilner L. (2023), "The impact of doubling the REP+ bonus on teachers' desired mobility", *INSEE Analyses*, No. 87.

(58) After Hanushek E.A. (1986, 1997), see in particular Diagne D. (2024), "Is there a link between teacher salary and educational achievement? An analysis in OECD countries", *Athens Journal of Education*.

(59) OECD (2023), "What do OECD data on teachers' salaries tell us?"

(60) Talis (Teaching and learning international survey). Ceesay K., Raffaëlli C., Rugambage N., Voisin C. (2025), "Conditions d'exercice et perceptions du métier d'enseignant à l'école élémentaire et au collège en France: les premiers résultats de l'enquête internationale Talis 2024", DEPP, *Note d'information* (in French only).

(61) Project for the acquisition of skills by students in mathematics (PACEM) led by the Ministry for Primary and Secondary Education in 2010-2012. Chesné J-F., Prost S. (2012), "PACEM: une expérimentation sur l'utilisation d'évaluations standardisées des acquis des élèves par les enseignants", *DEPP* (in French only).

(62) Bocognano L. (2021), "Le numérique éducatif: que nous apprennent les données de la DEPP?", Série Synthèses, DEPP, *Document de travail,* no. 2021.S03 (in French only).

(63) IGÉSR (2024), "La préparation aux formations et aux métiers du numérique et de l'informatique au lycée" (in French only).

Digital technology can improve student learning, but the extent of its impact essentially depends on how it is implemented and used.[64] The Digital Plan launched in 2015 provided individual or shared access to tablets for middle school students. Its assessment revealed very mixed results:[65] students from privileged socio-economic backgrounds benefited more in mathematics, while those from more modest backgrounds made greater progress in numeracy and French but regressed in their collaborative skills. The literature review conducted by the CAE[66] highlights the need to incorporate digital technology into teaching practices in a consistent manner. The most promising effects (up to 0.5 standard deviations) are linked to interactive content and adaptive learning software.

(64) Long screen time for recreational purposes has a negative impact on children's cognitive abilities (attention and memory skills). Chardon-Boucaud S. (2025), "The Attention Economy in the Digital Age", *Trésor-Economics*, No. 369.

(65) Azmat G., Fougère D. Mermite A. & Lobut C. (2022), "L'impact du numérique sur les apprentissages des élèves : évaluation d'une politique d'équipement à grande échelle", Série Études, *Document de tr*avail n° 2022.E04.

(66) Grenet J., Landais C. (2025), op. cit.

Recent Issues in English

November 2025

No. 376 The Outcomes and Objectives of Apprenticeships in France

Vincent Barde, Tristan Gantois, Joceran Gouy-Waz, Blaise Leclair

No. 375 The Role of Carbon Credits in Financing Global Climate Goals

Etienne Pasteau, Nicolas Krakovitch, Antoine Hébert

No. 374 Geopolitical Fragmentation of Trade

Aymeric Lachaux

https://www.tresor.economie.gouv.fr/Articles/tags/Tresor-Eco

Direction générale du Trésor

@DGTresor

To subscribe to *Trésor-Economics:* bit.ly/Trésor-Economics

For all press enquiries, please contact presse@dgtresor.gouv.fr (01 44 87 72 24)

This study was prepared under the authority of the French Treasury (DG Trésor) and does not necessarily reflect the position of the Ministry of Economy, Finance and Industrial, Energy and Digital Sovereignty