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## HOW DO WE IMPROVE LEARNING TO READ AT SCHOOL? THE IMPACT OF TEACHERS' PRACTICES IN PRE-SCHOOL

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### Summary

Adjusting teaching content to the progress of individual students, preparing to teach reading early, and increasing the amount of phonological awareness content are all education strategies that have shown encouraging results in literacy and reducing cognitive and socio-economic inequalities. The project LECTURE (Reading) proposed by the association called "Agir pour l'Ecole" aims to assist teachers to change their pedagogical practices, to adapt them as best they can to the progress of their pupils in reading. The impact of this teacher-training programme, designed for the upper year of pre-school, demonstrates significant improvements among the participating pupils, and a reduction in the inequalities, for a much better cost-benefit ratio than other education policies (for example, reduction of class sizes). This study underscores the importance of teachers' pedagogies on the progress of pupils and indicates that intensive and structured training can effectively modify their practices. ■

- Education research has identified good pedagogical practices that are not always adopted by teachers in France.
- Teacher training, structured and intensive can change their practices.
- A change in practices has positive effects on pupils' achievements in reading at the end of pre-school.
- The benefit-cost ratio of this practice is well above those of other policies aimed at simply increasing the available resources (such as reducing class sizes).



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Every year, around ten per cent of participants in the "Journée Défense et Citoyenneté"<sup>1</sup> do not master the fundamentals of reading<sup>2</sup>. As the PIRLS enquiry shows, these difficulties are present at the end of primary school<sup>3</sup> and already visible at the end of the first year of elementary school. If the results are not catastrophic, as some fear – France falls within the OECD average – then recent results from the PISA international study monitoring student achievements suggest that the French education system is failing to reduce initial inequalities among students, especially in reading. Some thought is required, then, about pedagogical measures adopted by the national education authority in order to reduce inequalities in school attainments, in particular at the time when children learn how to read. Reduction in class sizes, reforms to the pre-service national teacher training scheme, school timetable reform and remedial education programmes are some of the actions most often evoked to address the problems. **For its part, the association Agir pour l'École proposes to accompany teachers throughout the year to help them to adopt best pedagogical practices in order to improve their pupils' reading performance.**

### An innovative approach to improve reading skills

After years of debates opposing global/analytical and syllabic/synthetic methods, the subject reading skills and teachers' pedagogical practices has become an almost confidential topic in France. The theme has, however, been the subject of much overseas<sup>4</sup> research that concludes that phonological awareness<sup>5</sup> plays a central role in gaining literacy skills. Moreover, cognitive science studies as well as a number of experiments have shown the importance of the very earliest years of life in the future capacity of individuals to acquire knowledge and ultimately to succeed in their professional lives. Thus, reinforcing the pedagogical content of pre-primary teaching (at kindergarten and even at nursery age) reduces the cognitive gaps seen among children from the age of six years. Finally, numerous studies in the education and psycho-cognitive sciences and in the economics of education demonstrate that adjusting teaching content to the needs of each pupil is a particularly effective pedagogical practice for rapidly improving performance among "good" students as well as those in difficulty.

These three key results – the role of phonology, the need to stimulate pupils early, and adapting content to needs – while being recognised in the national curriculum, do not always seem to be the paths followed by teachers for preparing pupils to read in kindergarten and in first grade. The pedagogical freedom of teachers, recognised in law in France, makes prescribing methods and practices particularly difficult. However, even if the academic programme only fixes objectives, without prescribing precise methods for attaining them, pedagogical innovations based on existing scientific results and their impact on student achievements must be evaluated in a rigorous manner.

1. The term "reading" here essentially means the reading of non-words or very simple words, since children cannot be considered readers at this age.  
2. "Journée Défense et Citoyenneté 2014 : un jeune sur dix handicapé par ses difficultés en lecture", DEPP, Note d'information, May 2015.  
3. According to the last PIRLS enquiry, 2011, five per cent of French pupils have great difficulty in reading (are close to illiterate) and 25 per cent are weak in reading.  
4. See the final report of the National Reading Panel, US Department of Health and Human Services.  
5. To simplify, I use the term "mastery of phonology" to signify the capacity to link sounds and letters (phonetics) and the capacity to separate letters and phrases (phonology).

Among these teaching innovations are those proposed by the Agir pour l'École group, who advocate an increase in the amount of phonological development in pre-school, and adjusting teaching content to the rate of progress of each child. More than a simple continuous teacher training programme, this project, named LECTURE, aims at profound modification of teaching practices: after general training, teachers receive regular visits from specialists in the method, regularly measure the progress of their students by means of standardised tests, and use pedagogical tools (books, tests) developed by the association throughout the year. The declared objective is to increase considerably the amount of phonological awareness from the second half of the last year of pre-school and to prepare children better for learning to read in the first year of primary school.

### Rigorous evaluation

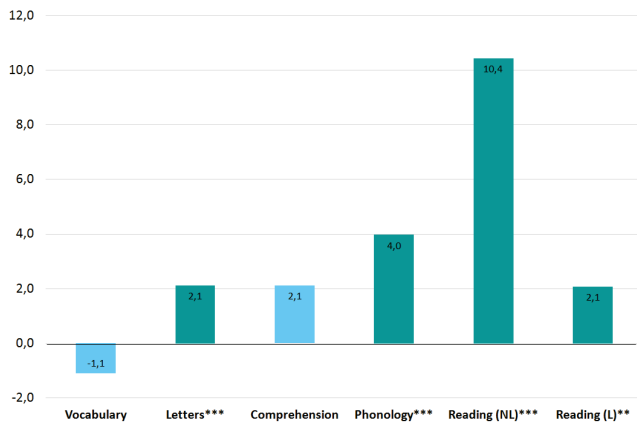
The study conducted by researchers at the Institut des politiques publiques (Institute for Public Policy, IPP) in collaboration with the Direction de l'évaluation, de la prospective et de la performance (DEPP) of the National Education Ministry and the University of Lyon 2, aimed to assess the impact of the continuous teacher training programme proposed by Agir pour l'École and the modification of pedagogical practices proposed in the LECTURE project on children's reading performances at the end of the last year of pre-school. The study was conducted between 2011 and 2013, in 118 pre-schools (a total of around 6,000 children<sup>6</sup>) classed as priority education schools and situated in the regions of the Ile-de-France (greater Paris) and Nord (départements 92, 93, 59 and 62).

The methodology is based on comparison of academic progress made by pupils taught in the schools that participated in the LECTURE programme with that of students in neighbouring schools that did not participate in the programme. The gap between the progress of the experimental and the control classes, as measured by the DEPP, can be interpreted as the effect of the training programme. It is possible that the two types of class were different from the beginning, but first, we are comparing not student achievement levels but rather their progress, and second, we have precise data on teacher characteristics as well as general information on the academic environment, which reduce the risk of bias in the selection to a minimum

6. In this initial sample, only 80 schools and 3,500 pupils participated in the two waves of the study from the beginning to the end of the year.

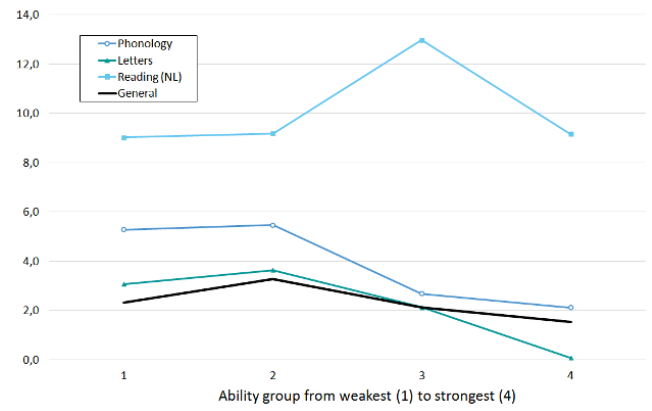


Figure 1. Impact of the LECTURE programme on student performance



**Note:** In non-lexical reading (NL), children in the schools participating in the LECTURE programme progressed by 10 points more than their counterparts in the non-participating schools. The scores are expressed out of 100. The stars indicate the level of significance: \*\*\* at 1%, \*\* 5%, \*10%. No star indicates that the results are statistically non-differentiable from zero.

Figure 2 : Effect of the programme by initial ability group



**Note:** Pupils in the first group (the weakest group) progressed by 5,3 points in phonology compared with the classes that did not participate in the programme, while those in the second group (the strongest at the beginning) only progressed by 2,1 points.  
NB: The results are constructed separately for each of the four ability groups created at the beginning of the school year (group 1: weakest students; group 4: strongest students).

## Some promising overall results ...

As Figure 1 shows, the effects of the programme demonstrate a faster general progression in performance at the end of pre-school in the participating classes than in the other classes. The impact of the programme is of the order of 10 points in the non-lexical reading test (NL)<sup>7</sup>, on average 64/100 and with a standard deviation of 23: that corresponds to a strong impact of 45 percent of a standard deviation, which translates to an average student sitting 13th in a class of 26 progressing to 9<sup>th</sup> place<sup>8</sup> in the class. In phonology, the progress is less marked (+4 points) but remains significant: it corresponds to 21 per cent of a standard deviation. Some weaker effects are also measured in the recognition of letters (+2 points – and even though this skill was not directly addressed by the method), and in lexical reading<sup>9</sup> (+2 points) although this is not considered a skill acquired by the end of pre-school. The absence of a significant impact on comprehension and vocabulary seems logical given that they are not specifically addressed by the LECTURE project. In all, the fact that positive impacts are directed principally at the skills targeted by the LECTURE method suggests that we are indeed measuring causal effects rather than effects tainted by potential selection bias.

7 This refers to reading "non-words", that is to say, simple words, without meaning, composed of phonemes, generally used at the beginning of the last year of pre-school.

8. That is to say, from the median to the 65 percentile based on the distribution of the NL reading test of the control group.

9. Reading of existing words.

## ... that reduce inequalities

By dividing the pupil sample into ability groups corresponding to those created by teachers at the beginning of the year, we see quite heterogeneous results. As Figure 2 shows, in NL reading (the most complex skill), the pupils who initially were the strongest are also those who progress the most quickly (relative to the control group). On the other hand, in letters and phonology (skills considered more basic), it is the weakest students who make the most progress. These results suggest that the pedagogical approach recommended by Agir pour l'École has transformed the teacher's lesson content: thanks to the creation of small ability groups at the start of the year, the teachers who did the training seem to have adjusted the teaching content to the specific capacities of the pupils more than the other teachers. This strategy is often considered as the most effective in achieving student<sup>10</sup> progress. When we investigate the impact of the LECTURE programme on overall student abilities (the orange curve in Figure 2), we see a reduction in academic inequalities among pupils; the strongest of these effects are observed for the second student group.

10. See the theory of the "zone of proximal development" and empirical studies that show the interest in such approaches in other countries (Duflo, Dupas, Kremer, American Economic Review, 2007).

## What lessons for education policies?

The results of this research indicate that at the end of the final semesters of pre-school (école maternelle), the LECTURE programme improves general student scores in reading<sup>11</sup> by 15.3 percent of a standard deviation. While the magnitude of the effect remains relatively modest<sup>12</sup>, it is statistically significant and the cost-benefit ratio is very favourable to this kind of training: a programme like LECTURE, which costs 200 euros per pupil and increases skills by more than 15 percent of a standard deviation, translates into an expenditure of 13 euros per point of improvement in student performance. In comparison, to achieve one percentage point of progress through the reduction of class sizes, requires an allocation of between 36 and 48 euros per pupil – that is, two to three times more. Note that our cost-benefit estimate does not take into account the possible long-term effects on student cohorts of the changes to pedagogical practices by the teachers trained in the programme. In reality, if teachers are capable of sustainably reproducing good practices, then the cost-benefit of such training cannot be simply compared with education policies that do not take into account teaching content.

In conclusion, the results obtained by this training programme for pre-school teachers invite optimism: despite the difficulties pointed to by comparative international studies, there are effective pedagogical strategies for reducing academic inequalities, improving learning and adapting education to the specific needs of each pupil. These strategies are not necessarily the most costly: they represent a substantial but reasonable increase of three per cent of the total cost of an early school year.

However, we must draw attention to the fact that the results presented here were obtained at the end of pre-school. While numerous international reading studies confirm the predictive character of phonology on reading skills acquired after pre-school, we cannot draw conclusions from our data about the effect of the programme in the medium term (the end of primary school) or the long term (mastery of reading at the beginning of high school). The difficulty in carrying out longitudinal studies of primary school pupils in France is highly prejudicial to this type of research and reflection on this question seems to be essential if we are to progress in this domain. In addition, it is important to stress that the programme analysed in this Note requires the active participation of pedagogical teams, close-up observation of teachers' practices and a significant mobilisation of local actors, including national education directors and inspectors (of Directeurs Académiques des Services de l'Éducation Nationale, and the Inspecteurs de l'Éducation Nationale respectively), education counsellors and teachers. These conditions can be difficult to coordinate, which underscores the importance of convincing local actors of the validity of the approach in order to win their full commitment.

### Reference study:

Adjusting content to individual student needs: Further evidence from a teacher training program, Adrien Bouguen, PSE Working Paper N°2015-09.

### Acknowledgements

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11. Scores of "non-lexical reading" and "lexical reading" regrouped in the same measurement.  
12. A result below 20% standard deviation is often considered low.