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CURRENT LITERATURE REVIEW IN EDUCATION

You are reading a literature review compiled by members of Veille & Analyses , a department of the French Institute of Education within the higher education institution ENS Lyon. We analyse research literature and activities throughout scientific and institutional productions in education in order to map out key research trends on current topics and produce states of the art in the educational research field.

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PISA: KNOWLEDGE AND USES

Since 2001, the results of PISA (Programme for International Student Assessment) have been made public every three years. There has been increasing interest in their assessments of the current state of national educational systems. While 'rankings' are perhaps the most widely known outcome of PISA tests, they are not their most interesting or useful outcome. The OECD PISA study represents an unprecedented source of data that has been used and analyzed by many researchers for a number of years. The international PISA tests have also fostered critical reflection on the diversity of approaches and uses of PISA results at a national level. This overview provides an introduction to the literature on PISA results and to the uses of PISA as an instrument of educational policy-making.

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AN OBJECT OF INTENSE INTEREST

While it is neither the only nor the first international programme aimed at assessing student learning and attainment, PISA has become the most prominent and widely-used international, programme of student assessment, resulting in significant academic interest.

HOW DOES PISA WORK ?

PISA was officially launched in 1997. The first survey was conducted in 2000 under the leadership of the *Australian Council for Educational Research*. PISA tests are conducted every three years, with each new survey emphasizing a different area (representing 2/3 of the questions): reading literacy in 2000, mathematics in 2003, and science in 2006. The cycle that began in 2000 ended in 2009, and a new wave of tests is currently underway, providing detailed data for conducting comparative assessments of performance trends. In total, 62 countries participated in the 2009 assessment – significantly more than the 34 member countries of the OECD.

The samples of students taking PISA tests are intended to be statistically representative of children aged 15 in the educational systems of participating countries. This requires strict control procedures to ensure sample quality.

In total, the assessment items represent approximately seven hours of work on questionnaires. Participating students are not required to answer all of the questions covered in PISA tests. Every student participates for two hours, responding to 50 items. The allocated time is deliberately limited to ensure that students answer questions quickly. The process is based on item response theory, a method used to conduct assessments by generalizing the predictive value of the results without requiring students to answer all questions. The items are grouped in categories based on 'real-world' situations. Only half of the items are in the form of multiple choice questions. The remaining questions require students to elaborate an answer. An example of a PISA test is available online.

Students are also required to complete a context questionnaire about themselves and their family background. This part of the assessment lasts 20 to 30 minutes. Headteachers are required to complete a similar questionnaire about their school.

THE ORIGINALITY OF PISA COMPARED TO OTHER INTERNATIONAL ASSESSMENTS

The first assessments aimed at providing international comparative data were conducted in the late 1950s. From the 1960s up until the late 1980s, the major body responsible for promoting international assessments was the IEA (International Association for the Evaluation of Educational Achievement) (Bottani and Vrignaud, 2005). ●

PISA differs in several respects from IEA assessments:

– PISA benefits from the involvement of key political decision-makers via the OECD, ensuring significantly greater resources and a wider dissemination of the results ;

– PISA was defined from the outset as a programme aimed at informing public policy, which implies that assessments need to be conducted on a regular basis to enable governments to use the data in developing and implementing new policies. The triennial PISA test (perhaps more frequent than is 'scientifically' necessary) ensures an unprecedented visibility and presence of PISA results in the public policy agenda ;

– PISA tests cover three main areas in each survey (literacy, mathematics, science), focusing on one main area and two subsidiary areas, thus ensuring continuity in the provision of comparative data and a continued involvement of participating countries ;

– PISA defines common references and frameworks for comparing countries with radically different educational traditions by surveying students based on age (15) rather than their situation at a particular educational level, and on general competencies as opposed to subject-specific knowledge and skills.

From the outset, PISA has operated independently of national curricula by assessing the basic competencies required of all students at an age roughly corresponding to the end of compulsory education in the majority of developed countries.

This brief overview has served to clarify the differences between PISA and other international assessment programmes aimed at defining key competences at the level of the OECD and the European Union, as well as its impact on national policies and initiatives, such as the tronc commun (common core of skills and knowledge) in French education. The increasing interconnectedness of national and international

The IEA (particularly known for its TIMMS surveys in mathematics and science and its PIRLS surveys in reading and writing) currently has 70 members – i.e. research bodies representing educational systems, whether governmental or non-governmental.

assessment programmes has been promoted by the Haut Comité de l'Éducation (2011), which recommends that assessment indicators should be compatible with international assessments conducted by the OECD and the IEA.

WHAT CAN PISA TELL US ABOUT EDUCATION ?

Until the end of the last century, very few studies had been conducted on international assessments of student learning and attainment in educational research in France (Bottani and Vrignaud, 2005). In the first two PISA studies, research on the subject in France was largely confined to debates among experts. While the public debate surrounding international student assessments began to develop in 2005-2006, it was only in 2010 that it began to have a significant impact on research. With a few exceptions, very little was made before 2010 of the data produced by PISA, with research remaining largely confined to the small number of research centers specializing in quantitative techniques (Mons and Pons, 2009).

THE INTEREST OF THE FRENCH EDUCATIONAL SYSTEM IN PISA RESULTS

The first (and most common) use of PISA results in French educational research has involved examining the relative position of France in international rankings and assessing ranking trends between the different waves of surveys. Analysis of the results shows that the average reading literacy score of French students declined between 2000 and 2009. Among the participating countries of the OECD, France was ranked 10th out of a total of 27 in 2000 and 17th out of 33 in 2009. The average score in mathematics also declined (-14 points between 2003 and 2009), while the average score in science remained stable between 2006 and 2009. ●

The distinguishing feature of France is the significant proportion of students at level 2 (defined as the threshold beneath which basic skills have not been acquired), which has tended to increase. In the most recent test (conducted in 2009), 20% of French students were ranked at level 2 (compared to 15% in 2000), indicating a 30% increase in the number of students experiencing difficulties linked to educational failure. In reading literacy, the number of French students ranked below level 2 increased by 30% between 2000 and 2009, compared to an average decrease of 6% in the 26 participating countries of the OECD. Between 2000 and 2009, the proportion of French students below level 1 (the weakest students) almost doubled (increasing from 4.2% to 7.9%). A similar trend was observed in mathematics between 2003 and 2009 (from 5.6% to 9.5%).

> *The intense practice of repetition is a key factor of the French paradox. If the results of students who have repeated a year were not included, France would easily rank among the leading countries involved in PISA studies. However, considering only the results of students who have repeated a year, the performance levels of French students in PISA tests are similar to the poorest member states of the OECD* (Forestier, 2007).

In France, the problem is not the overall level of education so much as the fact that most of the difficulties are at the bottom of the educational pyramid. ● Social inequalities are significantly more pronounced in France than in other developed countries.

● Based on average gross performance between 2003 and 2009, the stagnation or decline of France is less pronounced, with France often ranking just below the OECD average. It is more pronounced if the results of French pupils are compared to the progress made by students in other countries, such as Germany, Italy and Portugal.

● Which, according to Berthelot and Establet (2009), suggests that PISA tests confirm the significant 'wastage of human resources' in French education, which tends to train elites in small numbers at a very high cost, but is also required to devote significant resources to a largely ineffective and unfair compulsory education system.

A detailed analysis of the results shows that the French educational system is the very opposite of what it claims to be since it is defined more by social cooptation and curriculum segregation than by the democratic objectives of the 'collège unique' model, as argued by Felouzis (2009).

Since France is among those countries where cultural 'possessions' are the most discriminant factors in terms of performance levels, it is important to focus on reducing the effect of these 'possessions' on reading literacy scores. In addition, research has shown that working time at home is only associated with social inequalities in educational attainment in France, Spain, the United Kingdom, Italy, Belgium, and above all Greece. The implication is that a policy aimed at increasing working time at home would result in a decrease of inequalities in reading literacy (Meuret and Morlaix, 2006).

In terms of the perceived vocational relevance of education among students aged 15, France fares relatively well compared to other countries of the OECD, but fares particularly badly in all of the items used to measure 'wellbeing' at school. The typical climate in French schools appears to involve a combination of poor school integration and good integration among peers, i.e. other classmates (Duru-Bellat, Mons and Bydanova, 2008).

French students obtain better results in finding and retrieving information than in independent writing tasks

The assessments conducted over the last thirty years have consistently shown that French students struggle to make the transition from tasks involving information retrieval in a narrative text to more independent tasks that require interpretation and above all written analysis or commentary in response to open questions. French students are generally more competent at retrieving information in a text or at reproducing knowledge than at using their knowledge and critical skills to deal with situations outside the educational context (Grenet, 2008).

At the end of *collège (*middle school or lower secondary education), French students are less likely than students in other countries to be capable of answering constructed response questions. By contrast, French students perform better in multiple choice questions ●. The significant proportion of students who fail to answer questions may suggest that French students experience the greatest difficulties in writing rather than reading. In other countries of the OECD, students with similar scores (even weak students) answered the questions given to them. The fact that French students appear to be reluctant to give wrong answers (unlike students in other countries) is almost certainly indicative of their fear of being stigmatized for making mistakes. French students encountered particular difficulties when the expected answer required a writing task involving meta-cognitive processes. Studies have shown that French students have a tendency to link any question to educational routines and prefer not to answer a question if they have doubts about the kind of answer to be given (Rémond, 2006). These findings are indicative of a key feature of the French educational system, which tends to emphasize the mistakes made by students, sanctioning them accordingly (Emin, 2008).

● This is particularly clear in written comprehension, although this finding concerns all of the assessed areas.

These findings can be compared with the results of the PIRLS assessments conducted by the IEA in an equivalent area among CM1 students (penultimate year of primary education). The results show that French students fared well in questions that involved finding and retrieving information or making simple inferences, but that they were more likely to struggle with questions that involved interpretation or producing written work that required critical reflection. Rémond (2007) concluded that the range of tasks performed at school is possibly too narrow and that typical tasks merely require an immediate and superficial understanding of texts.

Results of tests that assess more than 'simple' reading and writing skills

In a secondary analysis of the results of PISA 2000, several members of the ESCOL research center (University of Paris 8, France) proposed a new statistical treatment of the answers given by 800 students based on different theoretical hypotheses.

The authors suggest that the items used in PISA 2000 to assess literacy referred not to a single skills sets (i.e. the ability to perform tasks in real-world situations) but to a range of different skill sets ●. The study found that the alleged stability and homogeneity of skills assessed in PISA tests only applied to the highest-ability students, i.e. those students who are easily able to use and combine the different skill sets measured by PISA tests. In other words, a range of contextual factors (mode of work, spheres of reference used, etc.) may be said to have a significant impact on student performance, to the point that students may respond differently for reasons that have little to do with the simple reading literacy skills that are assumed to be the focus of the test.

These findings complicate the task of predicting the success or failure of students in international surveys, but also of reflecting on possible remedial actions at an institutional, curriculum or pedagogical level (Bautier, Crinon, Rayou and Rochex, 2006).

The difficult transition from academic knowledge to reusable knowledge

French students are generally unfamiliar with PISA questions relating to real-world situations, the environment, and energy technologies (among other questions). In the situations used in PISA tests, the two major experimental sciences taught in the French educational system (physics and chemistry and life and earth sciences) are considered together, despite being taught separately in France ●.

The areas examined in PISA tests are not always covered by the French science curriculum or may involve broader perspectives such as the ability to identify a scientific problem as opposed to a social problem or the ability to identify the 'scientific' object of a question covering a range of (scientific and non-scientific) issues[9].

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While some students are spontaneously able to make connections between different areas, other students are unable to make the relevant links. The implication is that greater attention needs to be paid in science teaching to the development of knowledge 'about science' in all activities to ensure a better understanding of learning objectives (Tiberghien, 2009). The use of experiments to test a scientific hypothesis and the conclusions that can be drawn from the results of experiments tend to be well assimilated by French students. However, only 26.2% of French students (compared to 22.3% of students on average in OECD countries) are able to undertake the first stage of a scientific task – i.e. the search for experimental hypotheses or factors that may influence an experiment (Coppens, Bourny, and Cavayé, 2007).

Some PISA items are designed to assess students' ability to use numbers in real-world situations rather than acquiring formal mathematical knowle-

● In some cases, some subjects are closer to geography than to science.

● Set of academic skills, but also personal experience, values, opinions and prejudices, habits and common modes of interpretation of academic situations and *'skills and cognitive positions linked to literacy learning'*.

dge, which explains some of the poorer results of the French sample. Students in France are more accustomed to learning mathematical concepts than to engaging in learning activities that involve 'real-world' language. Some studies have shown that textual comprehension (which is not a purely mathematical process) is the main difficulty encountered by students, rather than the 'mathematical' problem itself (Bodin, 2006).

In short, French students perform significantly better in items that reflect the educational context or that involve areas covered by the curriculum: geometry, graph readings, and the definition and application of formulae. By contrast, students in France often struggle to see links between variables and achieve poor results in tasks that involve integers and decimal numbers. Similar results have been found in comparative analyses of British and French educational practices in this area (Doyle, 2008).

A NEW VISION OF EDUCATIONAL SYSTEMS IN THE LIGHT OF PISA

Since the early 2000s, there has been a renewed international interest in studies that use the results of external assessments to conduct international comparisons and to infer new tools for the analysis of educational practices. The immense and entirely unprecedented database provided by PISA is not unrelated to this development. Educational researchers sometimes use PISA data directly or reanalyze and complete them (including by using contextual data) through secondary analyses. This explains why a number of researchers have called for the development of such analyses in every country and for the public authorities to support access to data and to fund research in this area.

Olsen and Svein (2006) reviewed the different types of secondary analyses based on a comparison of mathematics education in France and Finland. Their work resulted in a conference held in Paris in 2005, where it was found that although PISA assessments only involve a small part of the mathematics curriculum covered by the French *Brevet (15%), they involve a wider range of high-level cognitive processes.*

Differentiation and the common core of skills and knowledge

As noted by Mons (2008), the databases generated by large-scale international assessments provide a basis for developing typologies of educational systems by highlighting long-term variations in results according to the effects of public policies. In terms of the assessment of educational policies, the databases provided by international assessments can be used as a basis for statistical analyses involving (on the one hand) the performance indicators of educational systems and (on the other) institutional frameworks, a product of political decisions.

In response to the problem of diversity, France is among those countries to have adopted a model of uniform integration. The French model involves a common core of skills and knowledge, with an initial selection process at the beginning of the second cycle of secondary education, high repetition rates, the use of ability grouping in some schools as early as the first cycle of secondary education, individualized teaching in the form of remedial actions, and a significant number of students leaving school with no qualifications.

This model is mainly found in developed Latin European countries (France, Spain, Portugal, etc.), where repetition, ability grouping and educational failure operate as adjustment variables. The model is rooted to a greater extent in a symbolic ideal (equality for all) than in a pragmatic vision, largely because of the

absence of sustained critical reflection on the required resources and of a proactive policy aimed at achieving the stated objectives (Mons, 2008).

Various secondary analyses of the PISA 2000, PISA 2003 and PISA 2006 databases suggest similar findings that may be of interest to educational policy-makers ●.

As noted by Crahay and Monseur (2008), the greater the tendency of a country to group students together based on social and/or academic criteria :
- the greater the likelihood of a disadvantaged student benefiting from attending a privileged school ;
- the greater the deficit suffered by a disadvantaged student attending a disadvantaged school ;
- the greater the gap between low and high-ability students ;
- the greater the gap between disadvantaged and privileged students ;
- the greater the correlation between social origin and performance ;
- the lower the average performance in reading.

Countries forming geographical, historical or cultural units tend to have similar levels of educational inequality, as noted by Green (2008) based on an analysis of PISA 2006. English-speaking countries and Continental Europe (Germany, Belgium) have high levels of educational inequality, while Northern and Latin European countries and South-East Asian countries tend to be characterized by low levels of inequality. In a qualitative comparative study aimed at identifying the factors accounting for regional differences, Green (2008) argued that the group of countries with the lowest levels of educational inequality is characterized by a relatively uniform system and by a limited use of ability grouping at lower secondary level.

Regression analyses based on PISA 2006 data suggest that educational systems based to a greater extent on educational market models tend to promote educational and social segregation, while educational systems based on comprehensive models and public regulation tend to reduce segregation, as shown by Alegre and Ferrer (2010). Alegre and Ferrer (2010)[11] identified detailed variables providing evidence of the significant impact of the age of first selection in education as a segregating factor and the significant impact of the freedom given to schools in determining their intake (which has been found to be more significant than the 'free choice' of parents).

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A national or regional tool for the analysis of educational systems: some European examples

It is beyond the scope of this study to provide a comprehensive review of all German studies that have used and examined PISA results in the wake of the shock caused by the first PISA results (see below). Suffice it to say that PISA has highlighted significant gaps in the educational policies of Länder and their results (Prenzel and Zimmer, 2006).

In the United Kingdom, research has tended to focus on the significant social disparities in education highlighted by PISA (beyond the good overall results obtained by British students ; see Doyle, 2008).

In an analysis of the declining performance of Dutch students since 2003, a team of Dutch researchers found a significant gap between the skills assessed by PISA and the objectives of the national curriculum, which (in the case of the Netherlands) are largely determined by the content of textbooks (Kuiper and Van Den Akker, 2011).

In Scandinavian countries, several studies have used PISA data to provide a more detailed analysis of a particular

aspect of educational systems from a regional comparative perspective.

Linnakylmä et al. (2004) compared the small proportion of Finnish and Swedish students who achieved poor results in the reading component of PISA tests to identify the key factors explaining poor performance in this area. The study identified a range of sociocultural factors that are difficult to tackle in schools (such as social origin and recent immigration) and other factors where educational measures can make a difference (such as fostering self-esteem among failing students). Another study (Leino et al., 2004) used the Finnish options of the PISA 2000 survey as a basis for conducting a secondary analysis of literacy data (every country was allowed to add optional questions specifically designed for its national sample). The study provided a more detailed picture of the practices commonly used in reading non-educational and internet material. Kjærnsli and Li (2004) examined the similarities and differences between Northern European countries in questions linked to scientific literacy skills in PISA tests ●. Hvistendahl and Roe (2004) compared success in literacy among students from Norwegian minorities based on the PISA 2000 results with the results obtained by minorities in Denmark, Sweden and Germany.

Based on an analysis of the PISA 2000 data for Northern European countries, Turmo (2004) found that the relation between PISA results and the cultural capital of parents is particularly significant in several countries in this area, suggesting the need to reinforce science teaching targeting students from culturally less privileged backgrounds and to develop a 'cultural' approach to science teaching aimed at identifying and reducing obstacles to the development of scientific knowledge and culture.

While the performance of Finnish students was found to be excellent based on the results of PISA 2003, the results relating to the level of engagement in education were less positive. To account for poor performance in this area, a Finnish study (Linnakyla and Malin, 2008) grouped students in six 'clusters' based on several variables: acceptance by peers, teacher-student relationships, perceptions of school values, and perceptions of the importance of school and education for their future.

TO WHAT EXTENT CAN PISA BE TRUSTED ?

Within the education research community, there is a broad consensus that the OECD programme has benefited from expertise and a methodological attention that requires a shift of critical emphasis away from debates relating to the rigor of the survey. However, this is not to exclude other debates or questions that may focus on the limits of this type of survey, from which commentators often infer more than is strictly warranted.

The effect of choosing 15 year-olds

In the PISA sample of French students, *collège students will necessarily have repeated a year, while lycée students will be 'on track'. If the selection and transition process occurred* before or after 15, the problem would not arise in the same terms. In this sense, the question that PISA tests help to answer is the current status and position of students aged 15 in different educational systems, providing indications about the impact on the skills acquired throughout education. However, PISA cannot be used to measure the significance of the impact of the composition of schools and classes on skills (Felouzis, 2009). The sample of French students included in PISA tests is not representative of a particular educational level, unlike other countries where students automatically move up to the next year, such as Finland, the United Kingdom and Sweden (Grenet, 2008).

● The analysis of the groups was used to identify significant groups by country or according to the geographical, cultural or political context.

Some studies have found that this approach may penalize educational approaches that focus on building knowledge 'blocks' up to the end of secondary education (when students are 17 or 18) as opposed to the development of a 'common core of skills and knowledge' supposedly achieved at the end of compulsory education (Prais, 2003).

Other studies have complained that international assessments tend to focus on the results of students during or at the end of their education without considering the progress made since the beginning of education (Tymms, 2004). Some critics have called for longitudinal studies that take account of the level of skills and knowledge at the beginning of education.

Recurrent methodological questions raised by international assessments

While international comparisons may be relevant for providing a global assessment of the performance of educational systems, it is important to be wary of more detailed evaluations, as noted by William (2008). For instance, it is impossible to infer conclusions about the quality of education provided. International assessments such as PISA are largely insensitive to the effects of high-quality education, for three reasons:

– Compared to the rate of success within an age class, the rate of progress of individuals remains invariably limited ;

– The standardized methods used in international assessments tend to exclude items with a greater sensitivity to variations in education and national educational systems ;

– The use of differentiating items in PISA (serving to identify and exclude items that cannot be compared across different languages) reduces the responsiveness of assessments to teaching and education.

International assessments are also invariably faced with the difficulty of using the same concepts and terms in several languages and cultures. Even if the translation of a given term is technically correct, the specific use or meaning of terms often varies from one country to another. It is important not to underestimate the issues raised by translations or the different meanings of instructions in different languages and cultural areas ●.

Vrignaud (2006) raised a more fundamental issue by suggesting that the psychometric emphasis ● of PISA tests may have become more important than the need for a theoretical elaboration of what literacy actually is. Vrignaud referred to the risk of considering the skills measured by PISA as having an autonomous and objective reality independently of specific cultural or social contexts despite the fact that they are closely dependent on a measurement model related to context-specific types of learning and particular cultural environments. Vrignaud concluded that PISA surveys should take better account of the theoretical definition (and not merely the psychometric definition) of skills by areas, as was the case in the OECD's DESECO project.

THE ROLE OF PISA IN INFORMING EDUCATIONAL POLICIES

THE 'PISA SHOCK' IN GERMANY

The best-known example of the vast movement of reform caused by PISA is Germany, where the results of PISA tests have led to a profound re-examination of the perception of the educational system and of wider social and cultural values. Other international comparative surveys had already underlined the poor performance of German students (especially in mathematics), but were only known to the elites. The novelty of PISA is that it became known to the general public and created

For example, in French, the term 'style' has a very literary connotation (in the sense of a writer's style), whereas for English speakers the term covers questions of illustration and typography.

« Psychometrics is the field of study concerned with the theory and technique of psychological measurement, which includes the measurement of knowledge, abilities, attitudes, personality traits, and educational measurement. The field is primarily concerned with the construction and validation of measurement instruments such as questionnaires, tests, and personality assessments.» (Wikipedia).

new political expectations. While the field of educational policy was not a major political topic until the mid 1990s, the increasingly widespread belief that there is a close link between economic competitiveness and educational performance has been one of the major outcomes of the PISA shock. The issue was thus no longer a purely educational matter, but also extended to issues relating to national prosperity and the decline of the country, propelling the issue to the top of the country's political priorities (Martens and Niemann, 2010).

From the very outset, the results of PISA tests showed that Germany was among the countries where educational success is most closely correlated with the socio-economic background of students ●. In a country where local areas and regions have always jealously guarded their educational prerogatives, the PISA shock resulted in a unanimous agreement among all Länder to introduce national standards at the beginning of the 2004-2005 academic year. The agreement to establish common standards and to introduce a national structure to ensure compliance with the new standards would have been inconceivable without the impact of PISA (Ertl, 2006) ●.

PISA has also had a significant impact on German educational discourse and research. Priority has been given to empirical research on the most effective educational practices, to such an extent that some researchers have suggested the idea of a comprehensive overhaul of the 'education' discipline in Germany (Bohl, 2004).

By contrast, while the ongoing reform agenda has focused on certain issues (such as national standards, quality assurance measures, and skill-based education), other key issues have been largely overlooked. For instance, there has been very little interest in the highly sensitive issue of student selection at the beginning of secondary education, despite the fact that many experts have attributed the poor results of German students in PISA tests to the early selection policy, with students engaged in different courses and programmes from a very early age.

There is also evidence to suggest that similar diagnoses may not necessarily result in the same responses, at least at the level of public policy-making. Some studies have found that while the results of German and Czech students in PISA tests are in many respects very similar, the perception of PISA in the two countries differs significantly. In the Czech Republic, PISA has not resulted in any major changes, with the early selection policy introduced in the early 1990s still receiving widespread support among the elites, the media and parents. According to the Czech scholar Greger (2008), there has been no *'evidence-based research'* ● on this issue.

INDIFFERENCE TO PISA IN THE UNITED STATES

PISA results have had very little impact in the United States, providing further evidence that there is no automatic link between the ranking of a country in PISA tests and its response to PISA. Several studies have noted that the United States had been aware of the weaknesses of its educational system for some time, which may account for the absence of any 'PISA shock' in the United States similar to the one experienced in Germany (Martens and Niemann, 2010) ●.

Since the late 1950s and the launch of Sputnik by the Soviet Union, scientific competitiveness has emerged as a major concern in the US, resulting in many reports calling for remedial actions to be taken in education (see for example *A Nation at Risk* in the early 1980s and *No Child Left* Behind in the early 2000s) and in a series of measures aimed at assessing and monitoring school results (accountability, standards, etc.). There is a broad consensus on the reasons for the poor

● German students of immigrant origins are among those who encounter the greatest difficulties compared to students of immigrant origins in other OECD countries.

● These reforms were largely inspired by the report commissioned from Klieme (2004), in which Klieme, a researcher at the German Institute for International Educational Research (DIPF), and his research team recommended the introduction of 'output standards'.

● For a definition of evidence-based research, see our blog Eduveille.

● Despite the fact that France was ranked 24th in mathematics (out of a total of 30 OECD countries), the PISA 2006 results were largely ignored in the French press.

performance of the American educational system, resulting in the introduction of a wide range of assessments aimed at comparing the performance of schools and states. This explains why PISA results have not been seen as a revelation in a country that has tended to focus on national assessments. Unlike its effect in Germany, the international assessment programme has not revealed a discrepancy between a 'perceived' image and a 'real' image ●.

In addition, since American universities are highly attractive, drawing significant numbers of high-level doctoral students from all over the world, the training of elites is not a major issue in the United States.

A WIDE RANGE OF RESPONSES IN DIFFERENT COUNTRIES

Responses to PISA in other countries vary widely between the two extremes outlined above (Germany and the United States).

In Denmark, IEA and PISA tests have been extensively analyzed over the last twenty years and have resulted in the development of a culture of assessment (Egelund, 2008). Since 2007, approximately ten national assessments have been introduced on a variety of subjects and at different educational levels. The fact that PISA is based on skills for lifelong learning has been well-received since a significant degree of similarity has been found between the objectives of compulsory education and PISA items. In other words, PISA has tended to validate the local educational culture, which in turn has legitimized the diagnoses of the international assessment (and vice versa).

In Portugal, the constitutional government has used PISA as a basis for justifying a number of educational reforms, giving them an international credibility beyond national debates and controversies. Examples include the New Teacher Assessment Model, the Portuguese Language Education and Culture Programme and the National Reading Plan. PISA data have been used to reinforce the arguments of the government and to increase its decision-making abilities by consolidating the knowledge derived from national assessment tools (Afonso, 2009).

Although the Netherlands has experienced a decline in ranking since 2003, the Dutch government stated in the autumn of 2010 that one of its political priorities was to be ranked among the 'top 5' countries involved in PISA tests by focusing on assessments, basic skills and knowledge, and the top 20% of students (Kuiper and van den Akker, 2011).

Although the excellent results achieved by its students have largely consolidated the Finnish educational system, different lessons have been drawn from the results of PISA tests. Teacher unions have argued that the good performance levels are the result of the expertise and quality of Finnish teachers, while government representatives have argued that the results are a consequence of reforms introduced in recent years, such as the development of a comprehensive system, university training for teachers, the greater autonomy granted to teachers, and educational decentralization. By contrast, while PISA reports show that the results are due to the homogeneity of students' results, with very few 'high-performing' students, ministerial reports have interpreted this as a problem and have called for the introduction of measures aimed specifically at precocious or highly gifted students (Rautalin and Alasuutari, 2009).

The PISA results of Hungarian students are not consistent with the international surveys previously conducted by the IEA. While the curriculum-based IEA surveys indicate high performance levels, PISA tests have produced disappointing results in the skills targeted by the OECD survey. It appeared that the ground was laid for a 'PISA

shock' similar to the one experienced in Germany. However, although the PISA results have been at the heart of the public debate on education in Hungary, they have not resulted in a political consensus on the lessons that need to be learnt for educational policy-making or in an academic consensus on how to interpret the results (Bajomi, Berényi, Neumann and Vida, 2009). In Romania, PISA has generated very little debate and has had very little impact. Because no major social or political leaders have discussed the results, PISA studies have not emerged as an object of significant public or professional concern (Rostas et al., 2009) ●.

In the French community of Belgium, there has been widespread media coverage of PISA and intense discussions surrounding PISA in parliament and among public policy-makers. Some research (Mangez, 2009) suggests that the results have largely been used as an additional argument in debates focusing on pre-existing conflicts or in traditional conflicts between different public policy perspectives.

A LATE AND LIMITED ENTRY OF PISA IN THE PUBLIC DEBATE IN FRANCE

According to Charbonnier (2011) ●, 'while students are often assessed in French education, we are reluctant to have the system assessed'. In France, it is clear that there has been no 'PISA shock' in the sense of a converging and brutal acceptance of the need for a whole range of reforms made necessary by the revelations of PISA studies. Until 2004, the debate surrounding PISA in France was a matter of experts, largely because the French Ministry of Education was careful to anticipate the official release of the results with a view to lessening their impact and channelling the public debate. Ministry experts have insisted on the methodological biases and limitations of PISA tests, a view that has remained largely unchallenged by teacher unions and other educational actors, providing further evidence of the principled resistance to PISA tests in France.

However, following Sarkozy's election, the government made extensive use of the PISA 2006 results, especially the Education Minister Xavier Darcos. PISA 2006 marked a decisive break in attitudes towards PISA, resulting in a greater use of PISA in political discourse and a significant level of media interest in PISA results. In this sense, a political shift may be said to have resulted in a cognitive shift, and not vice versa (Mons and Pons, 2009).

As a result, the relatively poor results obtained by French students in PISA 2006 and PISA 2009 have been used more frequently to justify or emphasize the need for specific educational measures and reforms. However, it would be wrong to infer that the debate surrounding education now centers on PISA. What can be said is that the good results obtained by students in Finland and in a number of other Northern countries have resulted in frequent references to the educational structures of these countries, either to use them as a model of good practice or to criticize them based on different assessment criteria. ●

A KEY ASPECT OF INTERNATIONAL SOFT POWER ?

OECD surveys have often resulted in meetings between experts, scholars and educational policy-makers keen to analyze the data provided by PISA tests. In this sense, the success of PISA is unprecedented, with the data providing a common reference acting as a bridge between research and policy-making (Barroso and De Carvalho, 2008). As a basis of mediation between research and politics, PISA may be said to have been incorporated in a chain of translation processes between several worlds.

● Nevertheless, starting in 2006, national assessments have been conducted at different educational levels and have served increasingly as regulatory instruments.

● OECD analyst and PISA representative.

● The case of Finland (where the good results obtained in PISA tests have been interpreted as being indicative of the success of comprehensive inclusive education up to 15) is of particular interest to those keen to challenge the supposed link between comprehensive education and high attainment levels. There has been a recent flurry of polemical writings aimed at deconstructing the 'Finnish model', from academic-style papers (Bulle, 2009) to blogs referring to a fictitious Finnish 'academic' (Taksin Nuoret, untraceable in Finland or in any academic directory), who has developed a theory attributing the good results obtained by Finnish students in PISA tests to the Finnish language.

The use of PISA by national governments also illustrates the way in which international student assessments are now used as tools for regulating educational policies in the context of what public policy researchers have come to refer to as 'soft regulation', with the OECD operating as a 'third-party evaluator' aiming to assess, rank and compare different educational service providers (i.e. different states). Through PISA, the OECD is thus able to perform an indirect but major role in educational governance. A number of researchers working on 'governance by numbers' have examined PISA as a tool for a new governance of European education (Grek, 2009). Some have argued that through PISA, the OECD has acquired the academic legitimacy to popularize directions in educational policy-making (Mangez, 2009).

This view has generated some concerns over the use of PISA as a benchmarking tool by using its potential for academic legitimacy and justification as a piece of evidence-based education ●. While there have been no calls for a 'universal' educational system in which PISA would serve as the benchmark, there has been much emphasis on the value of comparing the solutions devised by different countries to solve similar problems. A consideration of contextual data (and the use of appropriate context questionnaires) is still required to avoid drawing unfounded conclusions about possible causal links, by attributing the 'good' results obtained by a country to certain characteristics without any further control (Emin, 2008).

Political and educational decision-makers – who are probably the most assiduous readers of PISA reports – are prone to confusing factors, effects and causes. Surveys aimed at identifying causal factors should encourage research projects that use different methods to those used in large-scale quantitative surveys. Research in this area should include longitudinal studies based on qualitative and quantitative methods (Egelund, 2008). Gustafsson (2008) takes a more optimistic view, acknowledging that while international assessments lend themselves to misinterpretation and abuse, they can also potentially improve educational research by using the high-quality international data generated by international assessments, which improve our understanding of the educational effects of variables both within and outside the educational system[24].

Political and educational decision-makers – probably the most assiduous readers of PISA reports – are prone to confusing factors, effects and causes.

However, while the collected data might justify conducting secondary surveys, Rochex (2008) complained that international organizations and governments appear reluctant to promote and fund such investigations out of respect for the autonomy of academic research.

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