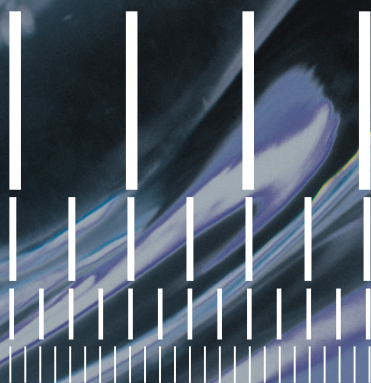


## Methods of Grouping Learners at School

**Vincent Dupriez**

UNESCO:  
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Institute  
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# Methods of Grouping Learners at School

Vincent Dupriez

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## Fundamentals of educational planning

The booklets in this series are written primarily for two types of clientele: those engaged in educational planning and administration, in developing as well as developed countries; and others, less specialized, such as senior government officials and policy-makers who seek a more general understanding of educational planning and of how it is related to overall national development. They are intended to be of use either for private study or in formal training programmes.

Since this series was launched in 1967, practices and concepts of educational planning have undergone substantial change. Many of the assumptions which underlay earlier attempts to rationalize the process of educational development have been criticized or abandoned. Yet even if rigid mandatory centralized planning has now clearly proven to be inappropriate, this does not mean that all forms of planning have been dispensed with. On the contrary, the need for collecting data, evaluating the efficiency of existing programmes, undertaking a wide range of studies, exploring the future and fostering broad debate on these bases to guide educational policy and decision-making has become even more acute than before. One cannot make sensible policy choices without assessing the present situation, specifying the goals to be reached, marshalling the means to attain them, and monitoring what has been accomplished. Hence planning is also a way to organize learning: by mapping, targeting, acting and correcting. The scope of educational planning has been broadened. In addition to the formal system of education, it is now applied to all other important educational efforts in non-formal settings. Attention to the growth and expansion of education systems is being complemented and sometimes even replaced by a growing concern for the quality of the entire educational process and for the control of its results. Finally, planners and administrators have become more aware of the importance of implementation strategies and the role of regulatory mechanisms, including the choice of financing methods and examination and certification procedures. The concern of planners is twofold: to reach a better understanding of the

validity of education in its own empirically observed dimensions, and to help in defining appropriate strategies for change.

The purpose of these booklets includes monitoring the evolution and change in educational policies and their effect upon educational planning requirements; highlighting current issues of educational planning and analysing them in the context of their historical and societal setting; and disseminating methodologies of planning which can be applied in the context of both the developed and the developing countries. For policy-making and planning, vicarious experience is a potent source of learning: the problems others face, the objectives they seek, the routes they try, the outcomes they achieve, and the unintended results they produce all deserve analysis.

In order to help the Institute identify up-to-date issues in educational planning and policy-making in different parts of the world, an Editorial Board has been appointed comprising professionals of high repute in their fields. The series has been carefully designed, but no attempt has been made to avoid differences or even contradictions in the views expressed by the authors. The Institute itself does not wish to impose any official doctrine. Thus, while the views are the responsibility of the authors and may not always be shared by UNESCO or IIEP, they warrant attention in the international forum of ideas. Indeed, one purpose of this series is to reflect a diversity of experience and opinions by giving different authors from a wide range of backgrounds and disciplines the opportunity to express their views on changing theories and practices in educational planning.

This book considers one of the most widely debated issues in educational circles, namely the impact of ability grouping on the academic performance of pupils or students at school and on their later prospects. The overriding concern of those responsible for education, no less than parents, is to know how to improve the academic attainment of students and, more particularly, how to raise the level of those who have learning difficulties. The answer which comes most quickly to mind, and the one preferred by teachers, is to place them together in uniform classes grouped in accordance with their ability, so that curricular content, teaching and teaching practices can be adapted to their personal characteristics and level of

attainment. Parents themselves seek to place their children in classes and schools which achieve good results, and whose teachers and students are supposed to be better than elsewhere. Where classes grouped by ability are in principle disallowed, it is often observed that head teachers reintroduce them in one way or another. Ability grouping goes beyond classes and exists at school level – some schools perform better than others – and in what is usually called ‘tracking’ or ‘streaming’. In lower or, more frequently, upper secondary education, students are channelled towards various ‘tracks’ or routes through school, some of which – whether pre-vocational or vocational – cater for those with learning difficulties, whereas others are intended for those who do best. Any policy seeking to push back the age at which groups of students are separated, guided towards different tracks or expected to specialize, is the subject of much discussion and reconsideration: this has been the case of the single *collège* and comprehensive schools (both broadly based secondary schools), and so on. Parents develop various strategies to prevent their children from being educated in classes or schools of mixed composition in terms of their academic ability or social background. Therein lies the success, for example, of the international schools. The problem, therefore, is not just one of educational effectiveness but also one of fairness and social cohesion.

Yet research findings show that, in reality, ability grouping does not always have the results expected of it and that, far from improving the academic performance of the least able students and reducing inequalities between groups, it tends rather to accentuate them. However, it is not always easy to separate the specific effect of grouping students in classes by ability, or in schools, from the impact of other variables with which these factors are often correlated. The many variants of such practices may also affect school performance and student prospects in different ways. It was important to take stock of all existing research in this field in order to draw helpful conclusions for educational policy and the management of education systems and schools. This is what Vincent Dupriez has done with great clarity and rigour in the present book. He covers the various levels of differentiation, examines the existing research which rarely deals with all of them, and from it offers some highly instructive



material for educational administrators. The Institute is extremely grateful to him for this contribution as well as to Marc Demeuse, Professor at the University of Mons who, as Associate Editor, invited Vincent Dupriez to write the book and supervised its preparation.

Mark Bray  
Director, IIEP\*

\* From 2006 to 2010.

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## Preface

In considering schools not just as institutions but with regard to the provision of services, one is led to examine closely their organizational procedures and operational methods. However, schools produce very special services, for whose output teachers and other staff no less than pupils and students themselves are doubtless responsible. Today, the latter are no longer regarded as simple repositories of learning to be filled to the brim, but as active participants in the learning process. This approach, which is undeniably very engaging and modern (and it is certainly not the purpose of this book to challenge it), cannot obscure certain potentially worrisome implications.

If, in this context, students are placed at the centre of teaching/learning processes, neither their personal characteristics nor the way they interact with teachers can be overlooked. The issue, therefore, is no longer one of concentrating on methods meant to work in absolute terms, but on those which might work given the students for whom they are intended. And if these students are the decisive factor at the individual level, prompting the conclusion reached by some economists that 'much of what is learnt depends on what they bring to school and not on what they find there' (Lemelin, 1998: 361), the same is equally true from a collective standpoint: a significant amount of what individual students can learn and the way in which they stand to gain from the instruction they receive will depend on the characteristics of their classmates. This mechanism is generally known as 'peer effect'.

Herein lies the reason why many parents, when given the opportunity, prefer their children to join classes with plenty of 'good students'. Of course, it remains to be seen exactly what these 'good students' represent and whether everyone really gains from this rather crude notion in favour of uniform grouping. There is also a need to grasp more generally the processes possibly at work depending on the precise methods of grouping and the undesirable effects the latter have.

The importance of what anyone may think or believe should not of course be discounted. Yet over and above personal convictions, some systems put a premium on freedom of choice for parents/

customers, whereas others regard the way school is organized, including methods of allocating students to groups for learning purposes, in very precise legal or regulatory terms, encouraging a certain kind of equal treatment and harmonious coexistence. As research is seeking greater effectiveness and, above all, greater justice within education systems, it must take into account not just political and philosophical restrictions, but also accumulated knowledge in order to help administrators in their search for appropriate improvements.

As is often the case in the social sciences, what one knows is not always an adequate basis for decisions, and knowledge will not always convince policy-makers ... and still less users. Questions concerning methods of grouping learners in classes, schools and tracks are not exempt from this twofold principle! Recent events in the French Community of Belgium over the question of legislation on enrolments at the start of secondary education are an excellent illustration of this. Policy-makers who create the impression of limiting the constitutional entitlements of parents familiar with exceptionally liberal enrolment procedures do so at their peril, even when supported by a mass of empirical data revealing the full extent of academic and social segregation arising in a system regulated essentially by (artificial) market rules.

Vincent Dupriez, who is *professeur* at the Catholic University of Louvain, has devoted much of his academic research to analysing the processes that give rise to the segregation which may be at work within education systems in general, and the various Belgian systems in particular. His knowledge of the data collected in international surveys and his time spent abroad, particularly in South America, make him highly qualified to undertake a summary of what is known about the management of mixed ability learning groups and its implications for effectiveness<sup>1</sup> and fairness in education systems, especially where the least privileged or proficient are concerned.

Marc Demeuse  
Professor at the University of Mons, Associate Editor

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1. Worthy of note is the most recent book he has authored and edited in this field: Dumay, X.; Dupriez, V. (Ed.) *L'efficacité dans l'enseignement. Promesses et zones d'ombre*. Brussels: De Boeck; 'Pédagogies en développement' series.

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## List of abbreviations

ECHP	European Community Household Panel
ESCS	index of economic, social and cultural status (PISA)
IALS	International Adult Literacy Survey
ICC	intra-class correlation coefficient
IEA	International Association for the Evaluation of Educational Achievement
IIEP	International Institute for Educational Planning
ISSP	International Social Survey Programme
GDP	gross domestic product
NELS	National Educational Longitudinal Study
PISA	Programme for International Student Assessment
PIRLS	Progress in International Reading Literacy Study
TIMSS	Trends in International Mathematics and Science Study
OECD	Organisation for Economic Co-operation and Development

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## Introduction

The issue of how pupils or students should be grouped together in education systems is not one to have arisen recently. Over the last few decades, much research and public discussion have been concerned with the ways in which classes within schools are organized, how and how far schools are segregated, and the existence of ‘tracking’ or ‘streaming’<sup>2</sup> within compulsory education.

To a great extent, these three questions reflect similar issues, which justify interest in them on the part of those responsible for education. The first issue is primarily of a political and prescriptive nature: what kind of school does a community wish to establish? If the school is viewed as the foremost institution in preparing people for public and civic life in a pluralist society (as is generally the case in democratic countries), then it has to be a place in which individual children learn to live with others, and discover worlds and cultures different from those they experience through their families. From this standpoint, it is desirable for each school (particularly if it provides basic education) to be, as it were, a microcosm in which a wide variety of students from a broad range of different social and cultural backgrounds are in regular daily contact. Naturally, in order to achieve this goal, due regard must be paid to the environment and changing circumstances specific to each country, and the support of citizens is also essential. This first issue relates primarily to a normative concern and a debate extending well beyond the realm of scholarly research

In contrast, research is particularly relevant to a second issue at the heart of the present study, namely, evaluation of the effects of the educational environment on the learning and experience of students, and on their path through school. Studies undertaken in this area have focused on many different aspects of school life, for example, the influence of a particular school or class on the motivation,

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2. Of the two (interchangeable) terms, ‘tracking’ has been used here as arguably more current. The term refers to the practice of separating students into distinct branches of provision, which in most cases are academic, technical, or vocational.



well-being and ambitions of students regarding their studies and future professions. The most frequently examined topic, on which it is easiest to offer an overview, is the impact of the educational environment on learning and academic attainment. The present book is devoted to this, and will consider only in passing parallel points of interest such as the psycho-affective and psychosocial consequences of how students are grouped together.

Assessing the influence of learning groups on each of their members means considering the problem of equality of opportunity. Indeed, if one regards this as a basic prescriptive principle of educational strategy in democratic countries, it makes sense to examine the real learning opportunities that students are actually offered. As a result of many different factors, these opportunities vary from one school – or sometimes one class – to the next. One such factor is ‘peer effect’, in which scholarly research has long been interested: this is the influence exerted on each student by the others in the class or school concerned. (Just how broad and complex a matter this is will become clear in what follows.) Thus, on moving away from the artificial environment of experimental research, one is bound to acknowledge that a change in the composition of a group of students is matched in most cases by a change in the quality of the educational environment. Research has often demonstrated that within a given school in which students are supposed to follow the same curriculum, *de facto* differences exist between a class with academically strong students and a class with those who have learning difficulties: the content of what is taught is not exactly the same, real working time may vary substantially, teachers adjust their expectations and requirements to the level of the class, and so on. As many researchers tend naturally to categorize phenomena, they may consider that direct peer effect and variations in the quality of educational provision are quite distinct. However, once it is felt that the quality of provision depends (if only partially) on the composition of the groups taught, isolating the influence due specifically to those two factors when interpreting data becomes problematic. The present book will return more than once to this matter, which cannot be resolved simply or unequivocally. Moreover, it is one of the keys to understanding the processes through which groups of learners exert an influence, as will be explained in particular in the first two

chapters on the formation of classes and segregation among schools, respectively.

The distinctive feature of this book is that it discusses the grouping of students within the three contexts of classes, schools and tracks (routes or paths) through school. The reason why these matters are addressed in the main by different authors (not to say different branches of research) is partly because explaining them means referring to different fields of investigation, but also because they correspond to separate levels of action and decision-making within education systems.

How classes should be formed within particular schools is a problem in most cases addressed by their head teachers. School heads may call upon established expertise in education, teaching and social psychology to inform their decisions and try to organize their classes as effectively as possible. However, the way in which students are assigned to particular schools is a more political issue. While assignment may be ‘enlightened’ by research findings, it mainly reflects a country’s political culture and is tinged with the prevailing ideologies at a given point in time. For example, it is no coincidence that, at the end of the 1980s, it was a ‘liberal’ government in the United Kingdom that decided to do away with the policy of school catchment areas and establish for families the principle of a ‘free choice’ of school, thus bringing into being a ‘school market’ system. In the field of research, economists and sociologists are probably those who have most vigorously addressed the question of how students are allocated to particular schools. Their research – and especially that of the economists – seeks on the whole to identify the impact of the various institutional mechanisms used to distribute students among schools.

Besides complementing the other two levels of investigation in this study (the distribution of students within classes and across schools), the issue of separate tracks (routes or paths) through school is a subject in its own right. First of all, to track students in this way is effectively to group them by ability in different classes and often different schools. From this standpoint, it is worth turning to studies of peer influence within classes and schools to understand the influence of tracking on the school career of students. Secondly,

tracking has a further dimension of its own, in that it is based on formal and deliberate differentiation of the curriculum, with far greater implications than peer influence and informal processes aimed at adapting the quality of provision to the characteristics of a group. Furthermore, the study of tracking in education systems is one aspect of a broader issue, namely the (historically developed) procedures for interrelating the world of education and training, and the world of work. In this respect, the Germanic model in which pupils are separated early (when aged 10 or 11) and guided towards different types of training has to be examined as part of a broader blueprint for relations between the worlds of education and work. This model attaches greater value to ‘sandwich’ arrangements for linked work and training than do countries of Latin origin, for example.

The basic premise of this book is that it is helpful to interrelate the findings of research on the foregoing three dimensions. In this way, readers will appreciate how the study schema resulting from research on the constitution of classes is partly applicable to study of the composition of schools. This schema is helpful in distinguishing between the direct and indirect influence (attributable to peers and the educational environment, respectively) of school composition on learning. The end of the chapter on schools will consider one subject in particular, namely, the most effective institutional arrangement for allocating students to them. Finally, the impact of tracks or routes through school in lower secondary education will be evaluated and interpreted in the light of the findings from earlier chapters.

This book thus offers an appraisal or overview of the studies carried out in the three fields of research. It should enable readers to visualize more clearly the choices to be made when the classes in a school are formed, when devising a system for distributing students between schools, or when tracking them through school in secondary education. The research described should result in a clearer perception of the impact of these different choices on the effectiveness of education systems and on the inequalities – and especially social inequalities – underlying the acquisition of knowledge.

## I. Uniform or mixed ability classes?

At the start of the school year, all head teachers are faced with the need to assign students to the various classes in their schools and, indirectly, with the question of whether these classes should be of mixed ability.<sup>3</sup> Taking into account current knowledge on education, should school heads be encouraged to form classes each of which is as uniform as possible in terms of student academic performance or, on the contrary, should they be advised to create mixed ability groups? This is the dilemma dealt with in this chapter. Without presuming to settle once and for all the debate between supporters and opponents of mixed ability classes, this chapter briefly reviews the case for ability grouping on organizational and educational grounds, and offers an appraisal of the main research in this area. The sections in this chapter are structured in accordance with the methodological approaches of the studies discussed – an approach adopted because differences in the research findings stem largely from the variety of methods for addressing the issue at hand.

The first methodological category consists of experimental (or quasi-experimental)<sup>4</sup> studies, which seek to pinpoint the precise effect of grouping students in a particular way by manipulating the educational environment. The second group comprises research undertaken in the natural setting in which students are educated: it measures (in quantitative studies) or observes (in qualitative studies) the circumstances and outcomes of the decisions taken by the players involved. In each section, a representative review of the category is highlighted and elaborated upon with a description of general trends apparent from similar studies as they appear in previous reviews of the literature or our own overviews. After taking stock of the overall

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3. Much of this chapter is based on a previous publication by the author, written with Hugues Draelants (Dupriez and Draelants, 2004).
  4. While in experimental research individuals are distributed randomly in different groups, in a quasi-experimental arrangement care is taken to distribute pupils in such a way that the groups whose outcomes are being compared consist of similar individuals.

contribution of this research, the chapter will suggest possible alternatives to ability grouping.

*Classes grouped by ability – one of several organizational principles*

Essentially, the idea of ability grouping stems from the educational claim that placing students of similar academic ability in the same class means that they can be taught more effectively, because provision is better geared to their needs. As the teacher is dealing with a relatively uniform group, he or she is able to vary course content and teaching methods on the basis of student learning attainment. The formation of classes in accordance with attainment levels may thus be investigated (Gamoran *et al.*, 1995) as an organizational response to diversity. In general and where rational norms prevail, organization theory considers that, whenever organizations are faced with an environment which is highly varied or becoming more so, they should seek to identify uniform segments and establish structural units to handle and manage them. In certain sectors, this segmentation seems to underlie an increase in the effectiveness and productivity of the organizations concerned.

The field of education is confronted with widely varying forms of demand and target groups. The massive spread of education is a reality, no less in the North than in the South, even though school enrolment rates sometimes still differ very markedly. Unification of the formal arrangements for basic education has also tended to diversify school intake and to make the task of teaching in most schools more complex. In this context, ability grouping in schools may seem an option based on a fairly rational organizational approach (Gamoran *et al.*, 1995) and on the educational assumption that, by grouping similar students together, it will be easier to ensure that their needs are properly met.

Nevertheless, research into classes grouped by ability suggests that they have several undesirable effects. To start with, grouping students by attainment level can give rise to variations in the scale and quality of teaching depending on the level of the class. Indeed, a very real departure from the curriculum is often observed, in which there are changes not in the strategies for achieving certain goals,

but in the goals themselves. In particular, the latter seem to become less ambitious, as student attainment decreases. These points will be examined in greater detail in the sections that follow.

In addition, differentiated organization of the school environment is problematic for two reasons. First, students constitute the 'raw material' of the education system. Placing them in groups is never an isolated act of no further consequence: compartmentalizing them on the basis of academic attainment in most cases tends to create other subdivisions depending on their socio-economic, cultural or ethnic background. This practice may thus soon run counter to the aim of social integration at school and attract varied criticism. Furthermore, ability grouping is associated, at least implicitly, with the status ranking of each of the groups and thus of the students within them. This may point to future problems of group polarization and social segregation, raising fundamental questions of a political and ethical nature, which receive insufficient attention when the grouping of students is discussed. Secondly, the organizational case for differentiation presupposes that resources and working methods can be adapted to the particular area of activity concerned. In education, this implies that the various classes grouped by ability correspond to different kinds of teaching activity, with an emphasis on those aspects of teaching most profitable in each context. Yet, as this book will demonstrate, research does not support the conclusion that, in practice, resources are adapted in this way. Furthermore, there is no general consensus about either the best teaching methods, or how they should vary depending on the group concerned.

For all such reasons, the organizational justification for differentiating groups of students is questionable and should be discussed with regard to the findings of research into the impact of methods of forming classes. This is the aim of the overview which follows.

*The effects of class-based ability grouping, examined with reference to experimental and quasi-experimental studies*

In the 1930s and particularly in the United States, a type of research was developed to discover, by experimental means, the effects of class composition on the learning potential of students or pupils. The main concern of scholars who subscribe to this approach has been to grasp specifically the impact of class composition, while ensuring that, irrespective of the class to which students belong, they are treated identically, in so far as they are subject to the same learning conditions (resources, arrangements, instructions and working time, etc.), and on occasion have the same teachers. In some studies, researchers start by measuring the abilities or performance of their subjects, and then distribute them randomly among different groups (uniform or mixed ability classes). In other studies, individuals are matched (on the basis of an initial test) and the researchers see to it that one student from each 'pair' joins a uniform group, and the other a mixed ability group. These experimental studies (random distribution) or quasi-experimental studies (matched students) thus make comparisons, while taking care to ensure that the content of teaching is similar and that the influence exerted by group composition is identified separately. From the epistemological angle, the resultant type of knowledge derives from an explanatory procedure, in the sense that one aims to test a causal relationship between the explanatory or independent variable (a uniform or mixed ability group) and the dependent variable (student attainment).

The main studies of this kind have been listed and examined by Slavin (in 1987 in the case of research on primary education, and in 1990 for work on secondary education) for purposes of meta-analysis. Crahay (2000) has produced a broad French-language overview of this research.

In the specific case of controlled teaching conditions, Slavin concluded that, according to the majority of studies, the fact that the group/class was uniform or of mixed ability had no bearing on either the average performance of students (whether in a uniform or mixed ability setting) or the performance of particular groups (generally those of high, intermediate or low attainment). Commenting on

this meta-analysis, Crahay (2000: 303) stated: ‘No impact is to be observed specifically as a result of grouping students in classes by ability, in either primary or secondary education. The word “specifically” is crucial here in emphasizing that, if the quality and amount of teaching provided are held constant, the way in which students are grouped does not affect their performance.’ Slavin and Crahay suggested that mixed ability classes should be retained, since research showed that nothing was to be gained from uniform classes.

While such studies are noteworthy for the rigour of their working method and because they can separate the ‘class composition’ variable from other factors, they do not always satisfy scholars who are interested in classes grouped by ability as settings for interaction and learning in the daily life of schools. The fact that class composition may be inconsequential in an experimental context does not necessarily mean that the same applies to a ‘natural setting’, when composition interacts with teaching processes (involving a real curriculum, teacher requirements and the time actually devoted to in-class learning, etc.) and psychosocial processes (self-image, peer comparison, etc.). It is this intuition which has prompted many researchers to study the dynamics and effects of real-life (class-based) ability grouping, in which they seek to understand the set of factors with which it is associated.

### *The effects of class-based ability grouping, examined with reference to studies in natural settings*

A first body of research in natural settings examined the effects of tracking on learning and progression to higher education, by comparing students from ‘academic’ and ‘non-academic’ tracks in the same schools. The strongest finding from this research (Dar and Resh, 1986; Oakes, 1982) concerns the highest educational level reached: students from academic tracks do better at school and are more likely than others to go to university. This is confirmed even when intentions and good performance are controlled experimentally before students are allocated to a particular track. However, such studies based on tracking have been criticized because they record the combined impact of both the curriculum and the school environment



(and in particular the make-up of the class). Investigation along these lines provides only a very approximate insight into the impact of ability grouping, as it overlaps with an effect linked to the track to which a student belongs (*Chapter III*). In response to this criticism, research procedures have been gradually refined and made more complex to allow for a better insight into the impact of class composition in real-life settings.

Some researchers have thus worked on the basis of comparisons between schools (depending on whether they contain uniform or mixed ability classes), whereas others, more recently, have dealt with the 'class attainment' variable as a continuous variable. Both approaches have generally relied on database analysis, whether this means studying first-hand data from surveys, or secondary analysis of administrative databases. To counter the above criticism, researchers have taken care to compare situations in which students follow, at least formally, the same curriculum.

*Comparisons between schools with or without class-based ability grouping*

In this type of study, researchers select on the one hand schools with classes that are essentially uniform (i.e. with ability grouping) and, on the other, schools with mixed ability classes. After statistically controlling initial differences between students (attaching special importance to their academic performance), they evaluate the impact the method of grouping has on their attainment in standard tests. Further information on sociocultural background is also often taken into account.<sup>5</sup> In so far as students are not distributed at random between the two arrangements (uniform or mixed ability groups), the quality of these data is vital in properly identifying the impact

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5. In order to evaluate the specific impact which the method of grouping students has on their final attainment, it is important to separate this factor in school organization as effectively as possible from the impact of other variables, by controlling for the initial level of students and for all personal and family variables likely to affect school performance during the year. This is why the investigation is generally based on how students progress: 'The initial level of students is included in the model explaining their final level, as a distinctive personal trait which enables the influence of other characteristics at an "identical initial level" to be examined' (Duru-Bellat and Jarousse, 2001: 103).

attributable to the method of grouping, and in determining that this is indeed the factor responsible for any differences in attainment.

This is the type of work that Kerckhoff (1986) undertook in Great Britain. He monitored a cohort of 8,500 students over a five-year period and differentiated them in accordance with whether or not they attended a school that contained classes based on ability grouping. To measure their progress, he used standardized tests in mathematics and reading for students aged 11 and 16. He pointed out that, between those ages, the organization of class-based ability grouping tended to widen the differences between students of low and high attainment. The phenomenon has come to be known as a 'differentiated effect': class-based ability grouping appears to penalize students with learning difficulties, whereas it tends to act slightly to the advantage of those who do well. This applies in particular to students placed in remedial classes (consisting mainly of those with difficulties). Generally, they fall still further behind the others.

Most researchers who have undertaken studies based on these methodological principles have obtained similar results. This applies particularly to Hoffer (1992), who took the *Longitudinal Study of American Youth* database as his starting point. He observed that placing students in a class that did well had a positive impact, whereas when they joined a class that did poorly the effect was the opposite (he compared them with students with the same attainment levels in mixed ability classes). The average effect was no different, statistically, from zero. Rees, Argys and Brewer (1996) also noted that class-based *ability grouping* was beneficial in terms of learning progress for average and proficient pupils but detrimental to those of low attainment. From their data, they found that the average impact of classes grouped by ability was slightly advantageous. Finally, after studying the consequences of *ability grouping* with reference to the scores achieved in mathematics by over 5,000 students at American secondary schools, Betts and Shkolnik (2000a) concluded that classes grouped by ability did not benefit everyone: they were detrimental to students with learning difficulties and supportive for those whose performance was average. These researchers considered that the overall impact was not significant.

In England, Ireson, Mortimore and Hallam (1999) conducted a major research project on the academic and non-academic impact of ability grouping. This study monitored over time more than 4,000 students (aged between 11 and 14) across 45 schools. The initial assessment corresponded to the primary school leaving examination, and the final one to the standardized tests used in mathematics, English and science after three years of secondary school. The researchers devised a special-purpose scale (from 0 to 4) to gauge the intensity with which ability-grouped classes were used during the same three years. The first finding from this work (Ireson and Hallam, 2001) was that there was greater use of ability grouping in mathematics than in science and emphatically more so than in English (the mother tongue). The researchers then used a multi-level analysis model,<sup>6</sup> to attempt to evaluate the impact of the 'ability-grouped class' variable on the performance of students in the three subjects, by controlling for the initial differences between them. It appears that classes grouped by ability do have an impact, but solely in mathematics (which is also the subject in which they are most widespread). While the overall effect of such classes in this subject was marginally positive, the main observation was again their differentiated impact: the most able students gained from their inclusion in classes grouped by ability while those whose attainment was lowest lost out.

The dominant conclusion is that: 'past studies which compare students from different ability groups to heterogeneously grouped students find evidence that the top students are helped by ability grouping and the bottom students are harmed, resulting in a net effect that can be positive or negative, but which is usually close to zero' (Betts and Shkolnik, 2000b: 2).

*'Class ability' as a continuous variable*

In the research referred to below, the type of class is no longer considered in dichotomous terms (uniform as opposed to mixed),

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6. These analysis models can deal simultaneously with the influence of various levels of analysis by separating the individual and contextual levels more effectively. Thus, it is possible to differentiate in particular between the influence of personal variables, and that of class-related and possibly school-related variables.

but regarded as an evolving variable providing information about the average ability of the class. Duru-Bellat and Mingat (1997) monitored 32,000 students from 212 *collèges* in France over time and made use, in particular, of initial and final standardized tests in mathematics and French. This study seems particularly reliable as it covers a large sample and was of long duration (students were monitored over a two-year period); it also took account of initial aptitude tests and other individual student variables (age on entering the *collège*, nationality, gender and socio-cultural family context). The authors found that two factors acted simultaneously, namely, the average attainment of the class and the extent to which its ability was mixed. The attainment level of the class had a significantly positive impact and helped all students to make headway, especially if the level was good. This effect was noticeably stronger in the case of students whose individual level was below that of their class. But the researchers also found that, at a given class level, it was better to be in a mixed ability class than a uniform one. However, this 'heterogeneity' effect was not as strong as the 'class attainment' effect. From this the authors concluded that: 'forming mixed ability classes was doubtless the best way of raising the average attainment of all students to the benefit of the weakest, without significant detriment to the most gifted' (Duru-Bellat and Mingat, 1997: 191).

Similar studies have been undertaken elsewhere. For example, Opdenakker, Van Damme and Minnaert (2006) noted that the attainment level of the class had a significant influence on mathematics learning in secondary education in the Flemish Community of Belgium. They also illustrated the mediation process between class composition and student scores. Indeed, from their (structural equation) analysis model it was clear that the average attainment level of the class influenced in particular the learning opportunities and working atmosphere within it – variables which in turn had an impact on learning itself. However, it should be pointed out that the level of the class/group in these different studies had an effect which, though significant, generally remained limited. In the

language of meta-analysis, this impact may be described as small to moderate.<sup>7</sup>

All in all, research conducted in a 'natural setting' no less than experimental research concludes that the overall impact of class-based ability grouping on the average scores recorded by a sample of students is close to zero. Studies carried out in a natural setting show that, while there is indeed an effect related to class composition, it is distributed in a contrasting way dependent on student attainment, which explains why a result close to zero is nearly always the outcome. Studies based on a comparison between schools (containing either uniform or mixed ability classes) thus reveal a differentiated impact and possibilities of gain or loss associated with classes grouped by ability, depending on student attainment at the outset. Research which considers class composition in terms of one or two continuous variables yields a more refined diagnosis: the major gain that proficient and very gifted students may obtain from the organization of uniform classes is not attributable to the uniformity, but to the average attainment level of their class. In the light of findings from the foregoing research, it is in any student's interest to join a class in which this level is high to maximize his or her learning potential.

All the research discussed so far has been carried out in industrialized Western countries. It would appear that few studies of this kind have been undertaken in countries in the South. Of those that have, only a few have been published in international scholarly periodicals, including the work by Broaded (1997) carried out in Taiwan. In referring specifically to previous research undertaken in the United States, he sought to determine whether ability grouping had the same impact in a radically different school and cultural environment. His study dealt with the transition from lower to upper secondary education (in *junior and senior high schools respectively*), and set out to evaluate the influence of school and family factors on access to the most prestigious upper secondary schools (the

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7. In most of these studies, the value of 'r' was lower than 0.2. An 'r' value of 0.2 corresponds to a situation in which a shift of one standard deviation in the independent variable (the average attainment level of the group) gives rise to a change of two-tenths of a standard deviation in the dependent variable (the student score).

*academic senior high schools*). His findings may be summarized as follows. First, if one controls for student performance on entering secondary school (before any ability grouping), the probability of securing admission to an academic senior high school is greater in the case of students in the higher ability group, but this difference is not statistically significant. He observes no differentiated impact linked to the presence of students in a high or low-level group in Taiwan. Second, his investigation reveals that, in spite of the definite existence of ability grouping in lower secondary education, the influence of social background on whether students gain access to the best school tracks is very weak, and becomes statistically insignificant if the model takes account of their ability. All in all, he notes that ability grouping at secondary school has no significant impact in Taiwan and cannot be regarded as a source of social inequality in the path through school. The way he accounts for this finding is especially interesting: 'In comparison with the United States, the provision of basic education in Taiwan is remarkably equal. It is characterized by a national standardized curriculum and relatively small variation across individual schools in levels of finance, facilities, and teachers' training and experience (Mao and Bourgeault, 1991, quoted in Broaded, 1997: 37).

That being so, it would appear that the use of ability grouping at the end of compulsory education does not have the adverse effects observed elsewhere, in so far as it has been preceded by six years of primary school during which every care is taken to ensure that pupils experience the same patterns of instruction.

### *Classroom observations: teachers adjust to their students*

The fact that a differentiated effect is observed in most research conducted in a 'natural setting', but not in research performed under experimental conditions, is clearly puzzling. One way of understanding this may be to assume from the outset that this effect is not related specifically to how students are grouped, but results instead from aspects of teaching which vary together over time, in accordance with the attainment level of the class. Moreover, this is what emerged from the study by Opdenakker, Van Damme and

Minnaert (2006) cited above. This hypothesis is also consistent with qualitative or ethnographic studies which have focused on variations in teaching conditions or 'learning opportunities' related to the level of the class under observation.

Enquiries of this kind are conducted by researchers on the ground and in classes and rely primarily on ethnographic data collection methods, such as observation (lesson recordings, direct observation of the persons concerned and in-depth interviews, possibly after viewing the recordings). In these studies, research activity to acquire knowledge is based in particular on interpreting the differences observed in classes and schools. This more comprehensive approach should not be regarded as the opposite to that of quantitative explanatory surveys. Explanation is enriched here through being inseparable from understanding, as will become clear.

Like Gamoran and Berends (1987) and Gamoran *et al.* (1995), one may attempt to summarize the main contributions of ethnographic research to the issue under consideration. After studying ethnographic surveys which focus on learning opportunities in different groups, and quantitative surveys which seek to explain differences in attainment, Gamoran *et al.* (1995) formed the hypothesis that variations in the quality of teaching are primarily responsible for greater inequalities in attainment. A phenomenon viewed in objective quantitative terms may thus be understood by means of a 'microsocial' approach which accounts for the underlying mechanism.

Ethnographic studies examine the influence of certain factors in real-life settings, such as the method of grouping students, or other factors associated with it. Their findings point to a clear difference in patterns of instruction between 'strong' and 'weak' groups. In particular, the time spent working in class and the complexity of learning activity vary significantly: the least able groups have to perform more repetitive tasks than the others and are not often given exercises involving analytical ability and thought. This difference in the pattern of instruction is partly attributable to a non-random allocation of teachers to classes. Ethnographic data suggest that the most experienced teachers, who are considered the most skilful, are assigned to the groups that do best. Clearly, such observations lend weight to the above-mentioned hypothesis that the level of the class

is less influential on the quality of learning, than the way in which the school and its teachers adapt to their classes and – depending on student attainment levels – offer more or less stimulating patterns of instruction.

Oakes (1985) and Page (1992) have also found that, in ‘proficient’ classes, students are given greater freedom and independence; they are more responsible for their own work and have greater opportunities for discussion. In contrast, classes in which attainment is low are also those in which work is more repetitive, time really spent on teaching is shorter, and there are fewer activities to develop analytical and creative skills. Metz (1978) suggested a long time ago that shorter and more repetitive working sessions probably reflected a strategy on the part of teachers faced with students who had behavioural difficulties and problems with authority. Van Zanten (2001) came to a similar conclusion in her study of ‘schools on the edge’ in France: teachers in suburban schools became, as she put it, ‘gradually disillusioned with their work and disinclined to adopt teaching strategies based on the image of an ideal student’ (van Zanten, 2001: 224). Many teachers judge whether an activity has been successful in terms of student participation or motivation, rather than learning outcomes. This attitude is readily associated with frequent downgrading of the curriculum and the adjustment of requirements to the presumed level of students. Concern for a quality relationship with the class is likely to become the top priority (especially as this is conducive to maintaining order in the classroom) and to lessen the frustration caused by low learning attainment.

A study carried out in Zimbabwe (Chisaka, 2002) appears to show that processes observed in the rich countries also occur in the poorest, possibly in aggravated form. After undertaking research in two Harare secondary schools, on the basis of observations and interviews with students and teachers, the author describes the atmosphere and learning conditions in classes with low student attainment. Although the plan for lessons was the same in the ‘strong’ and ‘weak’ classes (which revealed that the teachers did not use ability grouping to develop appropriately adapted teaching strategies), classroom activity and the way it was viewed by those involved were fundamentally different. The teachers perceived their work with ‘weak’ classes as a nightmare and had no faith in



the ability of their students. The latter had the impression that they were ‘good for nothing’. Teachers were more motivated by ‘strong’ classes and spent more time preparing or correcting their work. The discriminatory treatment of students, in accordance with their level, seems to be part of the culture of both schools.

While most ethnographic studies highlight a decline in the quality (or even quantity) of teaching in classes with low student attainment, research by Boaler (1997) in England led to a rather original conclusion: it demonstrated that the social dynamics within individual classes also posed problems in those that were ‘strong’. This researcher in the theory and practice of mathematics teaching carried out observations in a secondary school over a three-year period. He focused on lessons in mathematics for students aged 13 to 16 with reference to some 100 classroom observations, and to interviews and questionnaire surveys involving students as well as teachers. As in most secondary schools in England today, the school in question adopts the practice of ‘*setting*’, in which students are grouped by ability into ‘sets’ in each subject, depending on their ranking in it. The fresh data provided by Boaler deal mainly with what he calls the ‘*top set experience*’, or what students placed in the top class actually go through. His first observation concerns the work rate and the constant pressure exerted by teachers to drive students on. This pressure seems to be applied at the expense of their understanding and goes hand in hand with stress, anxiety and a competitive spirit that upsets many of them, especially girls. Without questioning the quality of learning in such an environment, Boaler reveals the disastrous effects in terms of motivation and pleasure. His questionnaire survey demonstrated that the students in the best classes were those who enjoyed mathematics least. Given the importance of the link between enjoyment and effectiveness in learning,<sup>8</sup> such a result points to a far from negligible problem. Boaler also noted that working conditions in the ‘strongest’ classes cannot be explained by the disposition of teachers, who are capable of adapting: they behave differently when they work with mixed ability groups or groups with a less ‘positive image’. According to Boaler,

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8. For a study of this link between them in mathematics lessons, Boaler cites the research by Hart (1989).

this is an outcome peculiar to *setting* (and, if so, of the pressure put on highly proficient students), which seems to be detrimental not just to those who are less able but also to those who do better.

Ireson and Hallam (2001), for their part, have focused on (declared) differences of behaviour among teachers, depending on the method of grouping adopted by their school. This may mean mixed ability classes, or classes grouped by ability, which may either vary in composition for different school subjects (as in *setting*) or be similarly grouped for all subjects (*tracking*). From questionnaire surveys, the authors concluded that attitudes observed in the case of *tracking* were also apparent where *setting* was practised. They also examined behavioural problems within the school, and demonstrated that problems of discipline and discontent among students were greater in classes grouped by ability than in mixed ability classes. They further noted that classes grouped by ability were environmentally prejudicial to the development of self-image, especially in the case of students from 'weak' classes who were more frequently objects of ridicule. Nevertheless, in discussing earlier research on this subject, they pointed out that the problem of self-image was also related to the ethos of individual schools and how they viewed the groups of students formed within them.

Also worthy of note is the research conducted by Dupriez (2002) by means of a questionnaire survey in secondary schools in the French Community of Belgium. After controlling for the academic composition of the schools, the author showed that schools with more classes grouped by ability experienced the greatest problems with student behaviour. It was in these schools – or more specifically the ability-grouped classes – that students who cared little about the content of lessons and failed to comply with requests by teachers were the most numerous.

All in all, the effects of ability grouping on learning seem to be attributable to the fact that the groups so formed lead teachers to vary the quantity, the quality or the pace of their teaching activities. The upshot of this 'curricular aberration' is to accentuate differences that exist between very capable students and 'weak' students from the outset. Teachers thus unconsciously offer the best students the greatest opportunities to do better still.

Rather than clarifying this phenomenon in terms of education or teaching, Duru-Bellat and Mingat (1997) invoke explanations of a psychosocial nature, in which belonging to a particular group has repercussions both for the way students construct their sense of social identity and for their learning. The basic concept to which these authors have referred is '*labelling*': teachers create their own perceptions of individual students and form expectations regarding their ability, depending on the class to which they belong. That has an impact on the self-image of the students concerned and on the image their peers have of them. As one's own self-image plays a decisive part in learning processes, it is understandable that the display of high expectations helps to ensure that the latter are entirely fulfilled, while the demonstration of low expectations does nothing for students whose attainment is low. All this is reminiscent of the Pygmalion effect and self-fulfilling prophecies (Rosenthal and Jacobson, 1971). The psychosocial explanation is thus concerned with the interplay between the distinctive expectations of teachers, on the one hand, and the images that students form of themselves in the various ability groups, on the other.

Finally, social psychology also focuses attention on comparative and standard-setting processes between students within classes. Belonging to a class with a good attainment level seems to have beneficial outcomes (for example, a desire to learn or to pursue studies), but also less positive ones. It would seem that, depending on the level of their class, students with the same attainment levels do not possess the same *academic self-concept*: they have the impression that they are doing better when they are in a 'weak' class and, conversely, that they are experiencing difficulty when in a strong one. Psychologists refer to this as the '*big-fish-little-pond effect*' and rely on the theory of social comparison to account for it (for an overview of this subject, see Dijkstra *et al.*, 2008).

### *Alternative methods of grouping students*

The final section of this chapter examines the practical implications of the research discussed so far, in order to appraise what seem to be the most appropriate methods of grouping students in schools today.

*Mixed ability rather than uniform classes*

Most of the authors cited reach this main conclusion: mixed ability classes are nearly always preferable to uniform classes. First, they correspond more closely to a democratic and pluralistic school strategy. Second, research to date has found that classes grouped by ability have no generally beneficial impact, while many studies reveal that they tend rather to accentuate differences in student attainment and thus penalize the least able.

In their book *Ability Grouping in Education*, Ireson and Hallam (2001) consider that work in mixed ability classes is preferable to that in uniform classes in the light of several considerations, including the following:

- it is more consistent with concern for equality of opportunity among students;
- it counters the negative social effects of classes grouped by ability and encourages cooperative classroom behaviour;
- it leads to a lessening of competition caused by classes based on ability;
- it forces teachers to take account of differences in ability and interests among students in the class.

*Possible scope for ability grouping on a provisional and flexible basis*

However, Ireson and Hallam (2001), Crahay (2000) and Rutter (1983) have all stated that it would be helpful to increase the flexibility of procedures in conventional groups/classes by paying greater attention to the rate at which children develop. Studies have thus been carried out on the formation of uniform groups within mixed ability classes. These have shown that teaching within a uniform group may be beneficial under certain circumstances, when groups corresponding to particular needs or abilities are formed for short periods. Reference is made to this kind of organizational arrangement when students in a mixed ability class temporarily leave it to join an ability-based group concerned with certain types of learning, or when they are regrouped by attainment level provisionally within their own class. The empirical findings indicate that the flexible organization of uniform groups matching the level of proficiency in

specific skills undoubtedly has beneficial effects, particularly in the case of less able students. According to Crahay, among others, this kind of grouping is radically different from ability grouping:

Here, it is recognized that some students at a particular point in their development display a very similar level of competence in a given subject, so it is considered right to group them together provisionally to pursue learning in it. By contrast, where classes are grouped by ability, it is assumed that there are gifted students likely to progress rapidly through the successive stages of learning, and others who are less gifted and thus not as fast. So, on the one hand, provisionally grouping some students corresponds to a period in which they have reached the same stage in a particular subject; on the other, the long-term grouping of students in hierarchical ranks reflects a classification of individuals which assumes that they possess stable and unalterable cognitive abilities (Crahay, 2000: 410).

Ireson and Hallam (2001) also emphasize the fact that procedures for distributing students among groups should be specific to each subject and provide for frequent transfers between groups. For example, groups at different attainment levels should sometimes work together so that proficient students can cooperate with those who are less so. Furthermore, the best teachers should be allocated to the lowest attainment groups. Finally, it is vital for schools to make known their concern that all students should do well and to attach importance to the progress achieved by those who are least talented.

*Another alternative: vertically grouped classes*

Subsequent work undertaken by Veenman (1995), researchers Ireson and Hallam (2001) and Brunswic and Valérien (2004) (whose study was more particularly concerned with African countries) suggested the idea of ‘vertical classes’ or classes comprising several attainment levels (‘multigrade classes’) as a procedure for grouping students. In this method, those from different school years are supervised by just one particular teacher and form a single class. This method is often adopted in small primary schools, especially in rural areas.

According to evaluations conducted in numerous countries,<sup>9</sup> school programmes organized along these lines do not penalize pupils in terms of learning and educational attainment. The pupils do just as well as – and indeed occasionally better than – others. From a psychosocial angle, they acquire greater experience of practices involving cooperation and support among their classmates. However, teachers sometimes criticize this approach because it leads to management difficulties and a heavier workload.

From research carried out in Canada, Martin (2006) has revealed that teachers in vertical classes required specific professional skills and therefore had to be appropriately supervised and prepared. The main skills needed were as follows:

- the ability to manage different tasks simultaneously;
- knowing when and how to form uniform or mixed ability groups;
- the ability to identify core concepts in the curriculum and transform them into tasks mobilizing different conceptual levels;
- the ability to devise a system of tasks in which students can act independently, cooperate and become responsible for their own progress.

If an education system wishes to develop classes of this kind, it is vital that teachers undertake initial and in-service training to prepare them for more complex working conditions than those of conventional mainstream classes.

Moreover, Brunswic and Valérien (2004) emphasize the importance of providing teaching materials aimed at lessening the sense of insecurity and (excessive) workload experienced by teachers faced with this kind of group. Finally, the number of students per class is an important consideration. In classes with more than 20–25 students, teachers find it particularly difficult to organize and supervise several working groups as each has its own tasks and goals.

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9. For an overview of this topic, with highly significant references to developing countries, readers may refer to the work of Brunswic and Valérien (2004).

*Supervising the change*

Finally, attention should be drawn to difficulties associated with any *radical change* in methods of grouping students. Teachers who have been working with relatively uniform classes for years have developed certain routines and devised resources to simplify their duties. When obliged to deal with groups of more varied ability because of a decision taken by their school head or even a reform of the education system, they have to make fundamental changes to their teaching methods, which may be a painful experience. Furthermore, getting the best out of mixed ability groups is linked to the goal of achieving equality among students and enhancing the attainment of the least proficient – an aim not necessarily consistent with the professional ethos of all teachers, forcing some to reconsider how they basically view their own occupation.

Rothenberg, McDermott and Martin (1998) carried out observational and collaborative research in an American secondary school, which clearly illustrated the difficulty involved in overhauling methods of grouping students. Under pressure from its head teacher, this school, which already had three classes grouped by ability in each year, had to organize a fourth class of mixed ability for students aged between 14 and 16. According to the authors, it took no less than six months for teaching practice to start to change and adapt to mixed ability groups, and the teachers had to take a course of training and supervision. After this period of ‘running in’, they adopted new working methods. From then on the students were able to express themselves and interact more freely, in addition to sometimes engaging in personal research assignments.

This project led to a particularly significant change: it totally altered the view teachers had of their students. Whereas formerly they tended to value most the ‘good’ classes in the school, considering teaching them a ‘reward’, the introduction of the project saw teachers initially paying greater attention to proficient students before gradually coming to appreciate the progress achieved by other members of the class.

Two key points emerge from this study. First, it is important that change be supported in various ways (by school management, teacher training courses or university backup). Second, one should

take account of the various factors that make it possible. Radical changes in teaching practices and the perceptions of teachers are the outcome of a gradual process; if this is not deliberately nurtured, work in mixed ability classes will not significantly alter and will produce no impact on students. Simply proclaiming the abolition of ability grouping is not enough: the teachers concerned should be properly supported, with due regard for their identity and professional expertise, if educational practice is to be truly transformed.



## II. Segregation among schools

The first chapter of this book dealt with how students are grouped into classes inside schools. However, the question of what methods should be used to group them within education systems does not end there, as one should also consider how they are assigned to different schools. This is the focus of this second chapter. It begins with a discussion of the descriptive data derived from the 2006 PISA (Programme for International Student Assessment)<sup>10</sup> survey, which reveal the extent of differences between schools in each of the participating countries. It then examines the influence of these differences in school ‘composition’ and evaluates how far they affect student learning. Finally, the chapter considers policies for allocating students to schools.

### *Worldwide descriptive data*

International databases for evaluating educational achievement focus on differences between schools in each country (or education system) with regard to their intake. They also provide evidence of comparative value in determining the relative scale of those differences.

The simplest indicator most often used to record differences between schools within a particular education system is the intra-class correlation coefficient (ICC). This is equal to the proportion of total variance in the variable considered (in most cases, an index of the academic attainment of students, or of their sociocultural background) that corresponds to differences between schools. When multiplied by 100, the ICC measures the percentage of total variance corresponding to the variance between schools. In *Table 2.1*, this kind of index is used in reference to two variables from the PISA 2006 survey, namely the competence of students in science (the main subject assessed in PISA 2006) and a summary index of

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10. PISA is a survey administered by the Organisation for Economic Co-operation and Development (OECD) every three years, covering a representative sample of students aged 15 in each of the participating countries.

their sociocultural status.<sup>11</sup> The first column in the table relates to an index of academic segregation among schools and the second column to one of social segregation; a high value in either case should be interpreted as reflecting a situation in which there are big differences between schools, with respect to their academic or social composition.

This chapter will now examine the influence of certain features of education systems on segregation among schools, and in particular the part played by tracking in lower secondary education. Separate school tracks are a source of academic segregation by definition, since students are channelled into them mainly on the basis of an academic benchmark. This accounts for the very high values of the academic segregation index in countries that introduce tracking at a very early stage in the path through school, as in the cases of Hungary, Germany, the Netherlands, the Czech Republic or Austria. *Chapter III* will return to the question of studies on tracking in due course.

At this stage, the relative influence of non-academic factors on school segregation should also be highlighted. The figures below draw attention, first, to the relation between social segregation among schools and the prosperity of countries<sup>12</sup> (*Figure 2.1*) and then to the relation between social segregation among schools and the level of sociocultural inequality in those countries<sup>13</sup> (*Figure 2.2*).

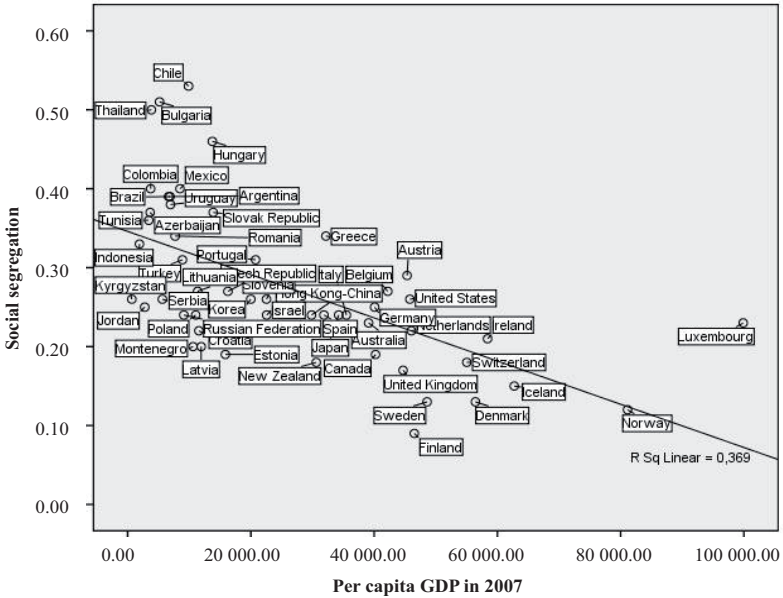
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11. This is the ESCS variable (the PISA Index of Economic, Social and Cultural Status, a composite index derived from information about the educational qualifications of parents, their professional occupations and family possessions).
  12. In Austria, the Czech Republic, Hungary, Italy, Japan, Romania and Slovenia, schools with more than one academic track have been divided into as many schools as there are tracks. This sampling strategy unquestionably increases segregation in comparison with countries that have not adopted the strategy. Similarly, in the Netherlands, schools have been divided in accordance with the level of education, which also increases academic segregation. The index used is per capita gross domestic product (GDP) in 2007.
  13. The index of sociocultural inequality used here is also taken from the PISA 2006 database: it is the standard deviation within each country associated with the composite index of student economic, social and cultural status (the ESCS variable).

**Table 2.1** Indexes of academic and social segregation

Country	Index of academic segregation	Index of social segregation	Country	Index of academic segregation	Index of social segregation
Finland	5.8	9.0	Hong Kong	36.5	24.0
Iceland	9.0	15.0	Thailand	38.5	50.0
Norway	9.9	12.0	Kyrgyzstan	39.4	26.0
Sweden	12.0	13.0	Uruguay	39.9	38.0
Poland	13.6	24.0	Croatia	41.3	22.0
Spain	13.9	24.0	Slovak Republic	42.4	37.0
Denmark	15.4	13.0	Serbia	42.6	26.0
New Zealand	15.9	18.0	Tunisia	42.8	36.0
Ireland	17.0	21.0	Taipei (China)	46.2	23.0
Australia	17.9	23.0	Brazil	46.6	39.0
Canada	18.4	19.0	Argentina	46.8	39.0
Latvia	18.4	20.0	Romania*	48.3	34.0
United Kingdom	18.9	17.0	Japan*	48.5	24.0
Estonia	20.5	19.0	Greece	51.7	34.0
Jordan	22.1	25.0	Azerbaijan	51.8	37.0
United States	23.3	26.0	Italy*	52.1	24.0
Russian Federation	27.0	24.0	Belgium	52.3	27.0
Montenegro	28.3	20.0	Turkey	52.8	31.0
Lithuania	28.3	27.0	Bulgaria	55.0	51.0
Macao-China	28.3	33.0	Chile	56.3	53.0
Luxembourg	29.2	23.0	Austria*	57.0	29.0
Colombia	31.3	40.0	Czech Republic*	57.8	27.0
Portugal	31.9	31.0	Netherlands*	58.9	22.0
Israel	32.4	24.0	Germany	59.9	25.0
Switzerland	34.2	18.0	Slovenia*	60.4	26.0
Republic of Korea	35.3	26.0	Qatar	60.5	/
Mexico	35.3	40.0	Hungary*	70.4	46.0

Source: Data taken from the PISA 2006 database.

**Figure 2.1** Relation between the prosperity of countries and social segregation among schools



Source: Data taken from the PISA 2006 database.

In Table 2.2, it would seem moreover that the relation between these socio-economic indices and segregation among schools is stronger with respect to social segregation than to academic segregation. This may be because social segregation is more dependent on the socio-economic environment, and because education systems are much freer to determine academic segregation, which depends on other factors such as the possible existence of different tracks through school for those aged 15.

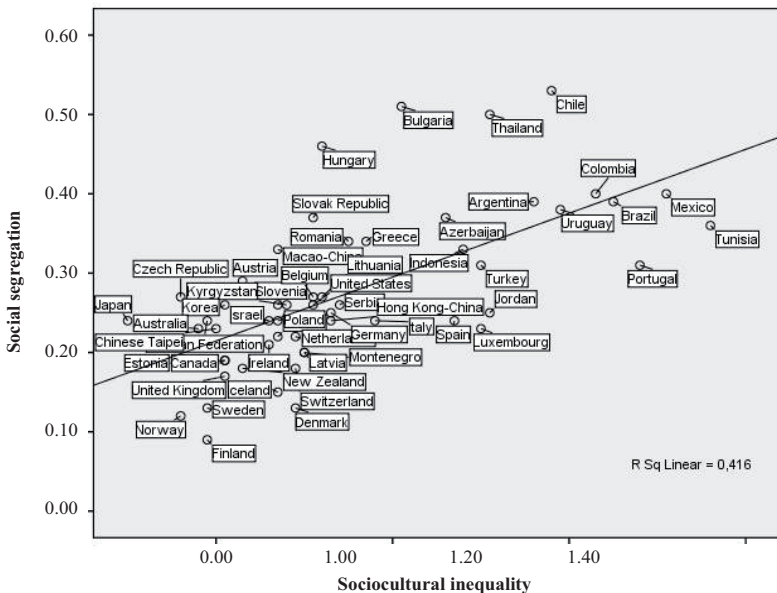
**Table 2.2** Relations between the socio-economic indices of countries and indices of segregation among schools (when students are aged 15)

	Social segregation	Academic segregation
Per capita GDP	-0.607**	-0.356**
Sociocultural inequality	0.645**	0.231 (ns)

\*\* significant at the threshold of .01. (ns): not significant.

Source: Data taken from the PISA 2006 database.

**Figure 2.2** Relation between the level of sociocultural inequality in the country and social segregation among schools



Source: Data taken from the PISA 2006 database.

It should also be noted that the relations shown in *Table 2.2* are derived from a survey covering all countries in the PISA study, including developing countries with a per capita GDP and levels of

sociocultural inequality very different from those of industrialized countries. If the enquiry is restricted to OECD Member States, a decrease in the value of the correlation coefficients is always apparent. However, the significant relations highlighted above (except that between sociocultural inequalities and the social segregation index) remain noteworthy at the 0.05 threshold. Similarly, if the two least rich OECD countries (Mexico and Turkey) are omitted, just a single coefficient remains statistically significant, namely, that which expresses the correlation between per capita GDP and social segregation ( $r = -0.574$ ;  $p$ -value = 0.002). From these successive enquiries, it is clear that the influence of the variables reflecting the socio-economic environment of education systems is especially noteworthy in any comparison between rich and poor countries; where the richest countries alone are examined, the effect of these variables becomes weaker and, in certain cases, is of no significance.

### *Does segregation have any impact?*

The data contained in the preceding section reveal broad differences between the indices of academic and social segregation in the various countries. These differences (especially in the case of social segregation) may be partly attributable to aspects of the socio-economic environment. But what can be said about their bearing on the composition of schools? Or to put it another way, how far does the composition of students at a school affect each student's individual educational career?

Since the publication of the Coleman report in the United States (Coleman *et al.*, 1966), researchers have paid close attention to how the school career of individual students is influenced by other students at their school – the so-called '*compositional effect*'. This report emphasized the point that students from very similar sociocultural backgrounds would probably have different school careers if educated at schools enrolling students from highly privileged environments or, on the contrary, from very disadvantaged ones. In fact, the point at issue here is very close to the one raised in the first part of this study on the composition of school classes. The only differences are the focus of enquiry (the school rather than the class) and, to some extent, the processes involved.

Evaluation of the existence and scale of the compositional effect has prompted two kinds of investigation, which it is important to distinguish. The first involves the secondary analysis of international databases, while the second has focused on national databases and so-called ‘*school effectiveness research*’.

*Secondary analysis of international databases*

International databases provide an opportunity to go beyond the simple descriptive account given above. They enable researchers to attempt to identify the impact of the group on learning, after controlling for the influence of individual student characteristics. As an example, one may take the work of Willms (2006), which was carried out using the PIRLS<sup>14</sup> 2001 and PISA 2000 databases.

The procedure adopted is generally as follows. Since students are not assigned to schools randomly, the researchers first of all devise variables by considering the individual characteristics of students that affect their learning. Such variables are based on information about the educational qualifications and professional occupation of the parents and the cultural resources available in the home. The researchers then disregard the impact of these variables; where differences between schools are still apparent (as is usually the case), they determine (in general with multilevel analysis models) how far the average characteristics of the student intake at each school (generally an index of the mean sociocultural level of students) help to ‘explain’ those differences. Such studies conclude with unflinching regularity that school ‘composition’ exerts a significant influence.

In the above-mentioned research by Willms or the study carried out by Vandenberghe (1999) with reference to the 1995 TIMSS<sup>15</sup> survey, the compositional effect appears to be at least as great as the influence of the sociocultural status of individual students. However, this method of gauging the compositional effect needs to be treated

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14. The Progress in International Reading Literacy Study (PIRLS) is a survey carried out periodically by the International Association for the Evaluation of Educational Achievement (IEA).
  15. The Trends in International Mathematics and Science Study (TIMSS) is a survey carried out periodically by the IEA. However, the sampling procedures it uses are such that the notion of group composition in this case refers more to the composition of the class than of the school.

with caution, as is emphasized by the research discussed in the following section.

*School effectiveness research*

Another kind of research has also dealt with the compositional effect on students, and in particular on their learning. This is work concerned with examining 'school effectiveness'. Its rationale and methodological procedures are very similar indeed to those of studies that make use of international databases.

The researchers attempt first of all, as it were, to assess the magnitude of differences in school performance;<sup>16</sup> they then identify the specific influence of school composition, as distinct from other school characteristics (teaching and organizational variables, etc.) likely to have a bearing on student learning attainment. Generally, they also introduce an index of the social and cultural background of students as a control variable.

After several years of lively debate within the research community (Gorard, 2006; Harker and Tymms, 2004; Nash, 2003), there is now a near-consensus: assessing the influence of school composition merely by controlling for student sociocultural characteristics, as is general practice in the secondary analysis of international databases, is felt to be unreasonable. Why? Quite simply because two students with the same sociocultural background may be academically very different (previous education, attainment at the start of the year, motivation, etc.), and these differences are not distributed randomly across schools. Any rigorous investigation thus has to take account of these 'academic' variables. Otherwise, there is a danger that the composition of schools will be regarded as having an influence that in reality is attributable to how they recruit their intake.<sup>17</sup> As Hanushek *et al.* (2001) point out, because students are allocated to schools in accordance with similarities (parents who live in the same neighbourhood or favour a particular school

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16. This is largely why such research is virtually non-existent in Scandinavian countries, in which differences between schools are almost negligible.

17. Bias of this kind is sometimes referred to as selection bias or endogeneity bias. The same observation has been made about the influence of composition at class level.



educational strategy), any index of average school level is likely to be taken as a proxy for individual characteristics that go unobserved, and most notably student academic attainment at the outset. Today, most scientific research in this area strives to focus on at least two measurements of attainment, namely, one recorded at the start of a period of education (usually a school year) and the other at the end of that period.

After taking account, therefore, of initial differences between students as regards their sociocultural background and educational attainment, such research attempts to ascertain to what extent specific school characteristics are the reason for different levels of performance.

An extract (*Box 1*) from recent research conducted in the French Community of Belgium shows that different conclusions are reached, depending on the analysis model used and the characteristics of the students concerned. In this example, it would seem that the compositional effect is greatly overestimated if initial student attainment is not taken into consideration. Nevertheless, it is not certain that this finding can be extrapolated to all education systems – a matter still to be resolved.

That said, researchers now consider that reliable assessment of the compositional effect necessitates using several indicators of the individual characteristics of students as control variables (most notably a measurement of their abilities at the start of the period of education concerned). They also agree (OECD, 2008) that, where the initial attainment of students is taken into account, the compositional effect decreases significantly.

*Between peer effect and the effect of composition*

From a more theoretical angle, attention should be drawn to the lack of clarity in research literature concerned with portraying and interpreting the impact of students in a school on learning outcomes. For a long time, work dealing with this significant contributory factor made reference to peer effects; today, researchers in the field of education refer to the above-mentioned ‘compositional effect’. Yet, the two are not the same.

**Box 1. The importance of measuring prior achievement:  
An example in Belgium**

This research was carried out in the French Community of Belgium (for a more detailed account, see Dumay and Dupriez, 2008), and covered all pupils in their sixth year of primary education at 52 schools. A first analysis (N = 1977) revealed that 25 per cent of the total variance in pupil scores (for proficiency in the mother tongue) corresponded to the variance between schools, and 75 per cent to the variance between the pupils within them. Next, the investigation primarily concerned itself with identifying the variables accounting for differences between schools. The individual sociocultural characteristics of pupils were considered first of all, and reduced the variance between schools by 35 per cent. In other words, 35 per cent of the differences between schools are linked to differences in the sociocultural characteristics of their pupils. If this remains the only control variable considered when evaluating the influence of the average sociocultural level of schools, the conclusion will show that compositional effect has a strong and statistically significant impact. Here, indeed, the average sociocultural level of the school appears to account for 31 per cent of the variance between schools, which is almost as great as the impact of sociocultural variables for individual pupils.

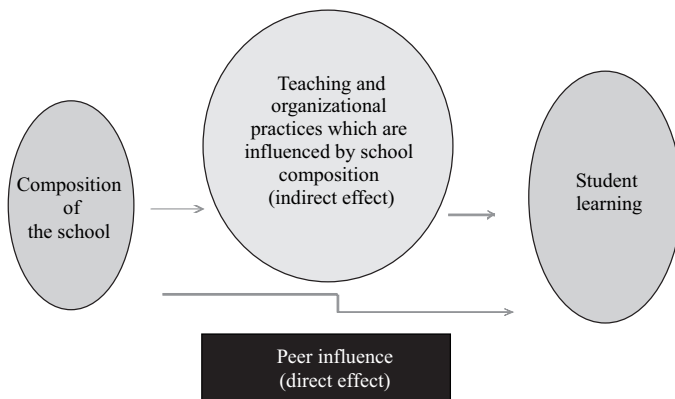
If, on the other hand, a second control variable is taken into account at the individual level, namely, pupil scores in a preliminary test at the start of the school year to assess proficiency in the mother tongue, the following will be observed: (1) that 77 per cent of the variance between schools is linked to differences in the (individual) sociocultural and educational characteristics of the pupils concerned, and (2) that, while the school compositional effect is indeed statistically significant, it is not as great, accounting for 8 per cent of the variance between schools, or 2 per cent of the total variance in the scores of their pupils. Otherwise put, it may be concluded that, in the case of primary education in the French Community of Belgium, the compositional effect is overestimated if differences in pupil educational attainment are not taken into account.

Why is this so? Primarily because, in Belgium, there is a significant correlation between the average sociocultural level of schools and pupil attainment at the start of the year, even when the influence of the individual sociocultural level of pupils is taken into account. This is probably attributable to the substantial level of educational mobility apparent in Belgium, a country in which population density is very high and the free choice of a school a longstanding practice within

the education system. It is possible that in countries in which such mobility is lower, overestimates of the compositional effect when initial educational attainment is not measured are not as great. But this has to be evaluated. In any event, the present example highlights how failing to take account of pupil attainment at the outset can lead to conclusions that the compositional effect has an influence that is in fact non-existent, or not as great as supposed.

As Wilkinson (2002) has suggested, the influence on learning of a group of students together in a school (or a classroom) cannot be reduced to one of peer effects. *Figure 2.3* shows that this influence in fact comprises a twofold process (which is consistent with the discussion of class level effects in the first chapter of this study). On the one hand, the group of students has a direct influence on each of its members. This may be termed ‘peer effect’ and corresponds to the involvement of students among themselves in processes of influence, comparison and identification. On the other hand, the composition of the school exerts an indirect influence on its organizational dynamics (for example, the school head may concentrate on tasks concerned with coordinating teaching activity), as well as on the dynamics of classroom teaching (a high-level real curriculum, real working time in the classroom, major expectations among teachers, a classroom atmosphere focused on work, etc.), factors themselves affecting the quality of learning.

**Figure 2.3 The direct and indirect influence of composition**



The distinction between an overall approach to compositional effect (a direct and indirect influence) and the special influence of peer relations is not just theoretical: it has a bearing on the methodological procedures for evaluating these effects. Any examination of research findings should strive to identify clearly the impacts that its authors have evaluated.<sup>18</sup>

In an effort to determine as accurately as possible the direct and indirect effects and the influence due specifically to educational practices within schools (which cannot be subsumed under an adaptation to school composition), some researchers have sought<sup>19</sup> to identify the net compositional effect (peer effect), the net effect of educational practices (their influence independently of composition), and the combined effect of these two or more variables. This joint influence concerns variations between schools in student learning, which is affected simultaneously by variations in the composition of schools and their educational practices. Undoubtedly, in schools which cater for privileged students of high educational attainment, teaching conditions are generally good, the working atmosphere is more disciplined, more time is spent working in lessons, teachers are more motivated, and so on. It is thus not always easy to distinguish between what is attributable to characteristics of school intake and what derives from the quality of work at the school. It should also be borne in mind that educational practices are not entirely dependent on a school's intake. Schools with an identical intake may adopt different practices with a significant bearing on student attainment. Specialist literature on 'school effectiveness' has revealed that factors such as leadership focused on teaching issues and student learning, high expectations on the part of teachers, numerous learning opportunities and systematic feedback to students encourage effective learning. It is these differences between practices, unrelated to school composition, which underlie a net effect attributable to educational practices.

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18. For example, if an analysis model takes account of the compositional effect, after controlling for the influence of variations in educational practice, it in fact evaluates no more than peer effect or the direct influence of composition.

19. In most cases, by means of a technique for rotating the explanatory models of student learning.

In a chapter dealing with differences between school intake and their impact, it is important to discuss briefly recent research on compositional effect (see also the summary provided by Dumay and Dupriez, 2009). As already stated, all such research includes an indicator of the initial ability of students, independent of a measurement of their attainment on completion of the period of education. In addition, this brief review of the literature also draws attention to the type of composition variable studied; in most cases, this variable is academic (average level of attainment), sociocultural (average sociocultural level) or ethnic (the proportion of students from a particular ethnic group or of a specific nationality). Finally, where researchers have paid attention to net effect and combined effect, their findings are also discussed in these terms.

In New Zealand, Lauder *et al.* (1999), using a model that considers different variables relating to individual student characteristics, found that the variance between secondary schools corresponded to 16 per cent of the total variance in the results achieved by students in national examinations in mathematics and English. Variables linked to the school (including several measurements of composition) accounted for 40 per cent of this variance between schools. School effectiveness (including compositional effect) thus seems here to be statistically significant and accounts for a little more than 6 per cent of the total variance in student scores.

Duru-Bellat, Mons and Suchaut (2004) have examined and evaluated the influence of social composition on the progress made by pupils and students and on their attitudes at primary school and at lycées (*upper secondary education*) in France. Their work indicated that this influence over a year was quantitatively small and not statistically significant in most of the years concerned. However, their research revealed that composition had an impact on the professional ambitions of students, on some of their attitudes and on the expectations of teachers and the demands made by them.

Several studies carried out by Opdenakker, Van Damme and their colleagues (2001, 2006) in the Flemish Community of Belgium have indicated that composition has a significant impact in secondary education. Their research (Opdenakker and Van Damme, 2001) showed that composition (defined as the joint effect

of educational, social, gender-based and ‘linguistic’ composition)<sup>20</sup> and the other distinctive school variables (working atmosphere, learning opportunities, quality of teaching, etc.) had substantial net and combined effects on the performance of students, independent of their initial attainment. The net effects of school composition and of variables concerned with the quality of educational practices accounted for 10 per cent and 16 per cent respectively of inter-school variance, whereas 17 per cent of this variance was attributable to their joint effect. The research also clearly showed that the inclusion of school composition in a forecasting model formed solely from variables concerned with educational quality lessened the impact of the process variables. This reveals the covariance between these two types of variable in that schools with the most favourable composition are those which adopt the most beneficial educational processes.

From a database on primary education in Texas (three successive cohorts of 200,000 pupils spread across 3,000 public-sector schools), Hanushek *et al.* (2001) evaluated peer influence on learning in mathematics. They noted that an increase of one standard deviation in the average results of peers led to a shift of 0.2 of a standard deviation on the scoring scale.

Using a longitudinal database from the 1988 *National Educational Longitudinal Survey* (NELS), Rumberger and Palardy (2005) studied learning curves (indicating how students progress between the eighth and twelfth years) in science, reading and mathematics. Their sample (14,217 students and 913 schools) was such as to represent American secondary schools. Their analysis of the composite scores (scores for the three types of learning combined) suggested that 25 per cent of the variance in learning curves corresponded to differences between schools. Individual student characteristics accounted on average (except in science) for less than one third of the variation in learning curves between schools. After taking account of factors such as educational and social background, individual socio-economic level and membership of an ethnic minority, the authors showed that the socio-economic

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20. ‘Linguistic’ composition relates to the percentage of students, within groups, who do not speak the language of instruction at home.

composition of schools had a significant impact on how students progressed. The coefficient of 0.11 measuring the effect of composition is nonetheless relatively small: a shift of one standard deviation on the scale for socio-economic composition corresponds to a change of 0.11 of a standard deviation in the progression of students over the four-year period. In addition, the authors observed substantial covariance between the socio-economic composition of schools and two of their characteristics, namely the expectations of teachers and the *academic climate*. Indeed, in their view, it is through these characteristics that composition exerts its main influence on how students learn. Here, therefore, one is primarily dealing with an indirect effect of composition.

Lauder *et al.* (2007), for their part, have also tested the impact of school composition on how pupils progress, but in this case during primary education in the county of Hampshire, England. An interesting feature of their study is the wide variety of composition indices they have devised, including those relating to social, ethnic and gender composition, as well as previous knowledge and average age. The authors collected data on progress over four years in reading and mathematics. They used growth curve models and showed that school composition was instrumental in accounting for a significant share of the variance in the initial level and progress of pupils in both subjects. Thus 24 per cent and 27 per cent of the progress achieved by pupils in reading and mathematics respectively were attributable to the effects of composition.

On the whole, these methodologically rigorous studies show that a statistically significant compositional effect is often observed. In some instances it is not very great (Rumberger and Palardy, 2005), and in others more substantial (Opdenakker and van Damme, 2001; Lauder *et al.*, 2007). It should also be emphasized that, where researchers are concerned to identify an indirect compositional effect, they acknowledge that it is definitely present. This is indicative of a process similar to that observed in the case of classes: a process in which the quality of the educational environment will vary with school composition.<sup>21</sup>

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21. That said, statistical analysis does not definitely establish that the process cannot sometimes work in the opposite direction, so that a school might recruit pupils in accordance with the quality of its educational practices.

Finally, the inclusion in analysis models of an initial measurement of student ability as a control variable is in itself significant, as it restricts in actual fact the possible influence of the compositional effect to the period between the two measurements of learning attainment. Yet, if this effect is only slight within that period, it definitely increases in magnitude over the entire duration of schooling because of its cumulative impact.

*What policies should be used to assign students to schools?*

The foregoing discussion has revealed – at least in some contexts – the influence of school composition on student and pupil learning. It has highlighted the methodological complexity of this issue and that a sufficiently sound model at the individual level should be used to avoid overestimating the compositional effect.

Even if such a compositional effect does indeed exist – at least in some education systems – it is important to consider what particular education policies might strengthen it or, on the contrary, limit it. It should be noted from the outset that the nature of the problem depends largely on the political, cultural, economic and social environment of differing education systems, to the extent that it is very difficult to engage in a general discussion on the subject.

For example, it is obvious that segregation among schools is conditioned by residential segregation, which itself varies from one country to the next and from one region to another within a country. In this respect, Reardon and colleagues (Reardon and Yun, 2001; Reardon, Yun and Eitle, 2000) have shown that in urban and suburban areas of the United States (in which the majority of students are allocated to schools on the basis of their place of residence), 60–65 per cent of the ethnic segregation among schools was linked to existing residential ethnic segregation among school districts. This is problematic, since policies for assigning students to schools are generally intra-district in nature. Similarly, segregation among schools in secondary education is strongly affected by the presence of tracks from lower secondary education onwards. It is well known that countries in which tracking occurs early (Germany, Austria, Luxembourg, Hungary, etc.) are those in which the greatest



differences in school composition are generally observed in secondary education (*Table 2.1*). School tracks and their influence will be examined in more detail in the third chapter of this book. Finally, a third variable influences the composition of schools, namely, the policies for allocating students to them.

Here, it is vital to stop and consider the major trends observed in many education systems over the last two decades. Most industrialized countries have long organized the distribution of students among schools in accordance with a catchment area policy, in which students are assigned to schools on the basis of place of residence. In many countries today, however, the principle that families should be free to choose their school is emerging as a real or potential alternative.

The underlying issue is that of regulating education systems. The bureaucratic-cum-professional form of regulation postulated by Maroy (2006) may be set against one or several forms of post-bureaucratic regulation. The market model has plainly been a source of inspiration to policy-makers, especially in English-speaking countries. The principle is simple enough: if student distribution is no longer governed by official procedures, families are entitled to choose the school they want their children to attend, so that schools find themselves competing with each other, which in turn encourages them to enhance their educational practices. The corollary of this is that the funding of schools depends on their enrolment levels, so that relatively unattractive schools are penalized. While the principle may seem to be logically consistent and raise the quality of education systems, one should point out, as does Maurin (2007), that competitive principles of this kind cannot be straightforwardly applied to the school environment, mainly because it is hard for parents to gauge the educational quality of schools, and also because it is not certain that quality is the main factor governing their choice.<sup>22</sup> They may be more interested in the kinds of students taught and overall results, rather than the progress students have made through attending a particular school. If so, schools stand to gain from

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22. In certain cases, the limited mobility of pupils, students and families should be borne in mind, as it precludes the notion that the situation for schools is truly competitive.

recruiting the best students rather than enhancing their educational practices – a situation that is likely to lead not to an improvement in quality of provision, but instead to greater segregation between institutions.

In order to evaluate empirically the potential added value and the possibly undesirable effects of such a policy, reference should be made to studies that have addressed this issue. In a recent book, Mons (2007) examined policies for allocating students to public-sector schools in 22 OECD countries, and the influence of these policies on the effectiveness and fairness of education systems. Rather than directly evaluating the influence of allocation policies on school composition, she instead focused on the principal identified result of segregation, namely, greater inequalities in student attainment.

In her study, Mons classifies methods of assigning students to schools.<sup>23</sup> The first model is described as one with ‘no choice’, which may be observed in the Republic of Korea, Japan, Hong Kong and Greece, and corresponds to a catchment area policy with no dispensations. The second model provides for ‘school catchment areas with scope for dispensation’, as is the case, for example, in France, Portugal, Germany, Austria and the United States. The third model is one of ‘regulated freedom of choice’. Parents express their preferences, which are then taken into account by the public authorities. The latter arbitrate where necessary on the requests made by families and are sometimes mindful of concerns in the general interest, such as the social mix within schools. This model, whose organizational forms may vary somewhat, exists in Spain, Sweden and Denmark. In this situation, all families are asked to express their preferences, not just those who are well informed and know how to obtain exemptions from the school catchment area principle (as occurs in the second model). The fourth and final model is one of ‘totally free choice’. Clear priority is given to family preferences, with little or no regulation by the authorities. Parents get in touch directly with schools, which take note of their wishes. Belgium, Hungary, New Zealand and, to some extent, the United Kingdom have adopted this model.

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23. In some countries, such as France, the United Kingdom and Belgium, the situation has changed somewhat since Mons published her study (2007).

Mons then assesses how these models for assigning students to schools are related to various indicators of fairness and effectiveness in education systems. By adopting the scale of the differences in student scores as an indicator, the author concludes that the ‘no choice’ and ‘regulated freedom of choice’ models are distinct from that of ‘totally free choice’, as the former display a significantly lower deviation in scores. Nevertheless, there is no significant difference between the catchment area model with scope for dispensation and the totally free choice model.

If one is concerned with the effectiveness of education systems (measured by the average score of all students), it would seem that neither the free choice model nor the regulated freedom of choice model is more effective. This runs counter to the claims that placing schools in competition with each other, while offering freedom of choice for families, improves the quality of institutions.

In short, Mons’s study, which concerns mainly the industrialized countries, reveals that, in terms of fairness, there is less difference in scores in two models for allocating students to schools, namely, catchment areas with no scope for dispensation and regulated free choice. However, it should be noted that the first model (no choice) exists mainly in Asia (Republic of Korea, Japan and Hong Kong); it is hard to think in terms of grafting it unchanged into most Western countries – ones in which, for historical and cultural reasons, a regulation with no room whatever for exceptions would probably not be readily accepted by families. The regulated free choice model would seem to be an interesting alternative, enabling both the requests made by families and concerns in the general interest to be taken into account. According to the work of Mons, this model is no less effective than the others; however, it gives rise to some degree of inequality in results.

Other studies by the same author have examined the significance of the private sector (or, in other words, non-public operators responsible for one or more schools) possibly subjected to some degree of public control. Mons has concluded that the greater availability of private schools is not linked to a gain in terms of effectiveness (average score of students). However, a private sector with little public authority supervision (such as, according to the author, exists

in Denmark and Australia) is associated with greater social inequality in attainment<sup>24</sup> than elsewhere. As regards effectiveness, Woessmann (2007) has reached conclusions different from those of Mons. From secondary analysis of several international databases (PISA, PIRLS and TIMSS), he concluded that a substantial private sector in receipt of public funds had a positive impact on the average effectiveness of education systems. According to Woessmann, public funding of the private sector means that family freedom of choice becomes a reality, as it is absolved from any financial implications. This point is of special importance for countries in the South (as will become clear in due course in relation to a research project in Chile).

It may also be pointed out that the United States is witnessing a debate on the subject of *charter schools* (new, relatively independent schools funded in accordance with their enrolment levels). While research by Hoxby (2003) is inclined to emphasize their positive impact, a recent issue of the Massachusetts Institute of Technology periodical *Education, Finance and Policy* (Maurin, 2007) calls for greater caution and considers that their effects vary from one context to another. In England too, the debate on the impact of free family choice policies remains an open one: there is still no clear evidence that they contribute positively to the effectiveness of the education system, and several studies have drawn attention to a growth in segregation among schools, especially in areas in which competition between them is more marked (Gibbons, Machin and Silva, 2006).

In the case of industrialized countries it should be borne in mind that, in terms of effectiveness, the positive impact of regulation by means of family choice has still to be demonstrated. However, several studies have drawn attention to greater segregation among schools in a competitive environment (Gibbons, Machin and Silva, 2006), and to greater differences in the results achieved by students in a context of unregulated free choice (Mons, 2007).

It is uncertain whether these considerations and studies are relevant where the countries of the South are concerned. The distinctive features of their cultural and, above all, socio-economic environments, have to be reckoned with when considering the most

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24. To put it another way, the score of students is more dependent there than elsewhere on the cultural status of their families.

appropriate system for administration of student enrolments. These countries are also noteworthy for the fact that they provide often far greater scope for 'paid-for' private education than developed countries, and for their reliance on targeted policies, such as the *Programa de Ampliación de la Cobertura de la Educación Secundaria* (PACES) in Colombia. This programme corresponds to a special initiative involving study vouchers distributed to underprivileged families enabling them to access private schools. Evaluation of such programmes (see Belfield and Levin, 2002) shows that they offer families helpful support. While this outcome is significant, it is not especially instructive as regards the issue of regulating the entire education system.

Since 1980 in Chile, the principle that families should choose their school is fundamental to the whole system. Numerous research studies have been carried out in the country, focusing in particular on the regulation of supply and demand in education. A brief summary of these studies is given below.

It should first be pointed out that, in terms of social segregation among schools, Chile is in an extreme position with one of the highest segregation rates in the world, as indicated in *Table 2.1* derived from the PISA 2006 data. Furthermore, research carried out with reference to national databases reveals that social segregation among schools is tending to increase, whereas residential segregation is decreasing somewhat. It is this which has prompted Chilean scholars to study the influence of factors specific to the organization of the education system on school segregation.

A sound insight into the nature of their study calls for a brief summary of a few features of the Chilean system. For over 20 years, it has been organized on the basis of a voucher principle and the public funding of municipal or private schools in accordance with their enrolment levels. The latter depend essentially on the persuasiveness of schools vis-à-vis families able to express their preference for enrolling their children at any one institution. According to Mons's classification, this model corresponds to 'totally free choice'. Yet the Chilean system has two specific features making it hard to compare with the countries examined by Mons. First, besides these grant-aided schools, it includes a non-subsidized private network

which enrolls slightly less than 10 per cent of the school population. Second, subsidized private schools have the possibility – which they clearly exploit – of asking families to supplement their public funding.

Statistical surveys have been conducted by Valenzuela, Bellei and de los Ríos (2008) to identify, within a multivariate model, the effects of residential segregation and various school-related factors on segregation among schools (such as the proportion of municipal schools and subsidized and non-subsidized private schools in the commune). The commune is the analytical unit. The study shows that, while residential segregation exerts a considerable influence (standardized regression coefficient = 0.32), the existence in each commune of both subsidized and non-subsidized private education has an even greater impact.

In the light of these findings, the authors have sharply criticized in particular the *financiamiento compartido mechanism*. In their view, the fact that subsidized private schools can request additional funding from families is enormously conducive to the growth of segregation, since their choice of subsidized school is heavily dependent on their economic means. Furthermore, with regard to the liberal model underlying the organization of this kind of education system, it involves a clear distortion of competition between publicly funded schools, municipal schools and subsidized private schools. At present, the main consequence of this system is that it reduces the enrolment level of municipal schools, which are abandoned by families able to pay the tuition fees of grant-aided private schools. But Bellei (2009) notes that the extra resources obtained by these schools are not matched by better quality education.<sup>25</sup> From this he concludes that deregulation and the education market in Chile have increased segregation; all the signs are that schools compete with each other to attract the best students rather than to enhance the quality of their provision.

Valenzuela, Bellei and de los Ríos suggest that the possibility of requesting extra funding from parents should be drastically

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25. This statement is based on multivariate statistical analysis in which the researcher assesses the impact of the schools, after considering the sociocultural characteristics of the students.

limited, and that steps should be taken to ensure public regulation of enrolments so that schools subject to excessive demand do not select students on the basis of socio-economic criteria. These proposals, they add, should be coupled with extra public funding, in particular, to support the education of the most underprivileged students.

In the main, these authors are fairly sceptical about the application of market logic to the educational domain and placing schools in competition with each other. It still remains to be demonstrated that this leads to an improvement in the standard of education. On the other hand, and in line with the reasoning of Maurin (2007), this would seem to exist in parallel with an increase in segregation and greater differences between the results achieved by students. Yet, reference to the research undertaken by Mons on the allocation of students to public-sector schools suggests that school catchment areas are not the ideal solution either. This author has shown that, in countries in which catchment area policies are coupled with many dispensations, great inequalities are apparent in student results. Two other models have proved to be both effective and reasonably egalitarian, namely, catchment areas with no dispensation and regulated freedom of choice. Furthermore, the latter model enables requests made by families and general interest criteria to be taken into account.

Most of this research has been conducted in industrialized countries. Its findings are not necessarily applicable to developing countries or countries in transition, in which inadequate public funding of education, social inequalities and residential segregation make the allocation of students to schools an even more sensitive issue. However, the studies carried out in Chile appear to yield a pattern of results fairly similar to the observations made in countries in the North: freedom of choice for families, which is unregulated by public authorities, going hand-in-hand with an extremely high level of social segregation among schools. This trend is probably exacerbated by financial selection in admission to subsidized private schools.

### III. Integrated or differentiated education systems?

This third and final chapter examines another factor which has an especially marked influence on the grouping of students. In particular, it discusses the position of *tracking* in lower secondary education. The chapter will draw attention to the issues underlying the formation of tracks, while demonstrating that it is simplistic to regard these as the only option when considering methods of managing students of mixed ability. At one end of the continuum, certain education systems, which clearly reflect a culture of integration (Crahay and Delhaxhe, 2004), have established a variety of arrangements for working as long and as intensively as possible with all students in a particular cohort. At the opposite end, other education systems prefer to differentiate between these at an early stage by introducing different tracks through school from lower secondary education onwards.

#### *Comprehensive or selective schools?*

Because students have differing levels of ability, education systems have sought – and are still seeking – to develop processes enabling the differences between them to be managed. In fact, as Broadfoot (1996) has pointed out, this question is indicative of a tension always inherent in schools, which have to satisfy simultaneously a twofold contradictory requirement. On the one hand, they have to differentiate between students on the basis of their learning ability, so as to legitimize their future position on the labour market; on the other, they have to contribute to social integration, by encouraging all students to accept a common set of values and knowledge. The ways in which education systems manage the progress of students through school reflect their chosen position in relation to this twofold contradictory demand for both separation and integration. Durkheim (1947) long ago pointed to the potential conflict between principles of ‘social cohesion’ and principles of ‘order’, according to which schools had to prepare their intake for the hierarchical structure of the labour market. How is one to ensure that schools are organized to accommodate both the training of an elite and education for all?



How and from what point onwards can one deal comprehensively with a variety of (general, but also vocational) educational aims? How can channelling students into different tracks or branches of education be legitimized?

For several decades, academic literature has highlighted the dichotomy between education systems involving differentiation at an early stage – so-called selective systems (as in Germany or Austria, in which students are placed in tracks from the age of 10 or 11 onwards) – and those often termed *comprehensive school* systems, in which differentiation occurs much later, with students bound by a common curriculum up to the age of 16. Thus Husén wrote:

A selective system employs organizational differentiation at an early stage in order to allocate children to different types of schools or sharply divided programmes. Furthermore, grouping practices are employed at an early stage with the aim of spotting students who are considered to be academically oriented. Apart from selective access and internal grouping, the system has a high attrition rate in terms of grade-repeating and drop-out (Husén, 1979: 96).

As to comprehensive systems, these typically involve a school educational strategy and a common curriculum for all students over a much longer period.

Even over 30 years ago, the first large-scale surveys carried out by the International Association for the Evaluation of Educational Achievement (IEA) revealed that differences were associated with the two foregoing structures (Postlethwaite, 1967; Husén, 1979). In short, they revealed how the comprehensive systems offered long-term education to a much greater proportion of students, and that this massive expansion of general secondary education did not adversely affect the training of elites. After examining the results achieved by the 5 per cent most gifted students within each system, Husén found that the position of many comprehensive systems was the same or better than that of the most selective ones.

More recently and using a measurement of performances in mathematics (TIMSS 1995), Vandenberghe, Dupriez and Zachary (2001) concluded that in countries with long single-structure

schooling, the scores achieved by students depended less on the sociocultural status of their families than in countries in which differentiation occurred at an early stage.

From the PISA 2000 data on reading literacy, Duru-Bellat, Mons and Suchaut (2004) studied the link between the material and cultural resources of families and student scores. They obtained a coefficient to measure the magnitude of this link and thus of social inequality in attainment in each country examined. In addition, they devised an aggregate variable which took account of the proportion of students who retook a year in primary education, the short period covered by the common core, and the level of segregation among schools. This variable thus provided an indicator of the level of differentiation in each education system. The authors showed that there was a significant correlation between this differentiation indicator ( $r = 0.63$ ) and the indicator of social inequality. They emphasized in their conclusion that grouping by ability or in separate tracks, but also any form of segregation among schools, tended to increase social inequality in performance. Furthermore, they found that the average score of students in countries 'with a differentiation culture' was not better: on the contrary, there was a significant negative relation ( $r = -0.33$ ) between this differentiation index and the average score of countries in reading literacy.

Crahay (2003) obtained very similar results when using different databases, including the TIMSS 1995 and the 1990 *Reading Literacy* study – two international surveys carried out by the IEA. He concluded that school institutions did not need selection processes to be effective: on the contrary, countries which postponed any form of differentiation for as long as possible were not just more egalitarian, but also generally among the most effective states in the European Union. In his view, education for all over a long period does not appear to compromise the training of elites, while the best way to obtain large numbers of very gifted students is through an integrated educational structure.

Gorard and Smith (2004) examined the PISA 2000 data and concluded for their part that systems which differentiate between students at an early stage increase differences in scores between social groups.

Dupriez and Dumay (2005, 2006) studied research of this kind with a special focus on social inequality in attainment. They discovered that: (1) within all education systems there was a relation between the social background of students and their performance (for example, Duru-Bellat, 2002), but that its intensity was somewhat variable, and (2) that education systems which introduced tracks at an early stage were those in which this relation was strongest, while it was weakest in those with a long period of integrated provision (i.e. no tracking before the age of 16, little or no obligation to repeat years of study, and little ability grouping).

These authors raised the question of whether the more egalitarian nature of certain education systems was linked to their structure or to the social characteristics of the countries considered (Dupriez and Dumay, 2006: 246). They offered different analytical approaches to identifying the influence of each of these two factors.

The first of these investigations revealed that, among the European Union countries,<sup>26</sup> the value of the correlation coefficient measuring the relation between the Gini index of income inequality (taken as an indicator of socio-economic inequalities within countries) and the index of social inequality in attainment was close to zero ( $r = 0.09$ ). In other words, among these European states, there was no relation between socio-economic inequality and the scale of social inequalities at school.

The second such enquiry sought to relate two inequality indices (the same index of inequalities in attainment used in the first analysis and a score dispersion index), which were measured at around the midway stage of primary education (the fourth year, using PIRLS 2001), and for young people aged 15 by means of the PISA 2000 data. Unfortunately, this relation could be established in only very few countries ( $N = 11$ ). From this intra- and inter-country comparison, it was possible to identify more clearly relative changes in the inequality indices and assess the relation between them and the possible existence of tracking. Examination of this sample lent weight to the theory that tracks have a specific impact on the two inequality indices. First, it revealed that in countries in which students

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26. Essentially, this research was carried out by considering the situation in the education systems of EU member countries at the beginning of 2004 ( $N=22$ ).

follow a core curriculum until the age of 16, there are inequalities in attainment among them when aged 9 or 10, which are at least as great – if not greater – than in countries with ‘tracks’. Second, the study showed that changes in the two inequality indices were, on average, more encouraging in countries with a core curriculum of long duration than in the others.

Why does tracking lead to such social inequalities in attainment? It is possible to offer an explanation based on three lines of reasoning. The first involves considering the impact of social background on school performance. Among students who experience learning difficulties, those from the least privileged backgrounds are the most numerous. It is they, therefore, who are most likely to be guided towards the less academically demanding tracks, where these exist. Secondly, as Erikson and Jonsson (1996) suggest, at each bifurcation in the education system, parents have to make a choice on the basis of risk, costs and benefits. The decision they take varies in accordance with their social position and their resources. However, a core curriculum lasting up to the age of 15 or 16 keeps the least privileged families away from a process of ‘self-selection’ and from choosing those tracks with the lowest academic standing, which are also perceived as involving the least risk. This notion has long been discussed in sociological literature. These first two points provide an insight into why there are more students from relatively modest backgrounds in the technical and vocational tracks of education. Thirdly, it is important to emphasize the impact of structure (with or without tracks) on learning conditions. The first chapter of this study explained at length why, in groups of lesser ability, learning opportunities in terms of working time and stimulation were not the same as those observed in highly proficient or mixed ability groups. Now, an educational structure without tracks is clearly more suited to the formation of mixed ability classes, since students with different levels of attainment are not steered towards different kinds of provision. In a structure with tracks, the less proficient students are not just placed in different groups, but assigned to a less demanding programme of study, at least in terms of general education. In the final analysis, it is probable that two factors are mainly responsible for the more socially egalitarian nature of comprehensive education: first, it rules out early selection over-dependent on the family

environment; second, the educational aims and patterns underlying it are of a quality from which the least able members of mixed ability groups can benefit.

At a broader level, Hanushek and Woessmann (2006) have also compared inequalities in education systems at different points in student school careers. They studied the average level and the differences in scores achieved by students in secondary education, while controlling for the same data measured in primary education. Their working assumption was that the investigation should point to differing changes in these factors, depending on whether or not tracks existed in secondary education when students were tested at the age of 15. This comparison between primary and secondary education was carried out by systematically cross-combining the information from six databases (TIMSS, 1995, 1999 and 2003; PIRLS, 2001; and PISA 2000 and 2003). The authors concluded that the presence of tracks at an early stage did indeed give rise to increased differences between student scores. The findings from the study of effectiveness were admittedly less clear. The differences were not as great and fluctuated from one subject to another: in the case of the mother tongue, tracking resulted in a significantly weaker performance, whereas in science, one of the three comparisons pointed to a statistically significant difference in favour of systems with tracks. In mathematics, no statistically significant difference was noted.

On the whole, these studies point to a systematic and statistically significant relation between early tracking and two measurements of inequality, namely, the magnitude of the difference in scores achieved by students (Hanushek and Woessmann, 2006), and social inequality in their attainment (Dupriez and Dumay, 2006; Duru-Bellat, Mons and Suchaut, 2004). From studies of this kind, it is harder to draw conclusions regarding the relationship between tracking and the effectiveness of education systems (see, in particular, Hanushek and Woessmann, 2006).

Be that as it may, most of this research is based on an almost dichotomous representation of education systems, hinging on the age at which students are channelled towards a particular track. Recently, several authors have drawn attention to the fact that the metabolism

of education systems is more complex and that one should consider mechanisms other than tracks when managing students of mixed ability. Mons (2007) has offered a classification enabling one to take account of differences between countries with a common structure for educating students until the age of at least 15.

*A classification of methods for managing mixed ability in compulsory education*

Mons (2007) has started from the premise that all education systems rely on one or several adjustment variables to cater for students of mixed ability. By means of joint reference to empirical data collected in PISA 2000 and institutional data concerning the systems under consideration, she has identified four of these variables corresponding to four mixed ability management models, namely, tracking, arrangements for students to repeat their year, ability grouping (by classes or within them) and personalized supervision of students.

The first model, or ‘separation model’, is based on the principle of separating and selecting pupils at an early stage. From the end of primary education, they are guided towards parallel tracks, mainly in light of their academic attainment. Classes grouped by ability may already exist in primary education to prepare for this selection process. Furthermore, many students often have to redo their year, a procedure viewed as a kind of safety mechanism to lessen the tensions of early selection. This model has been adopted notably in countries of Germanic culture (Germany, Austria, Hungary, Switzerland and Luxembourg) and to some extent in Belgium and the Netherlands.

The second model, the ‘flexible integration model’, corresponds to comprehensive schools in English-speaking countries (the United States, Canada, the United Kingdom and New Zealand). Up to the age of 16, all students follow a broadly common curriculum at around the same pace. In primary schools, intra-class groups cater for pupils of mixed ability. In the first stage of secondary education, a flexible policy enables students to be grouped in accordance with their general level of attainment or their attainment in each of the subjects taught.

The third model known as the ‘uniform integration model’ is present in the majority of Latin countries (France, Spain, Portugal, Argentina and Chile, etc.). All students together experience the same patterns of instruction and form a common core. There are no adjustment mechanisms in intra- or inter-class management. It is only through students repeating a year that their flows can be regulated and that those unable to reach the required level can be separated.

The fourth model, the ‘personalized integration model’, is especially characteristic of countries in the north of Europe (Denmark, Iceland, Finland and Sweden). Only under exceptional circumstances do students repeat their year and classes grouped by ability are uncommon. To enable all students to master the common curriculum up to the age of 16 at roughly the same rate, several methods have been adopted to differentiate and personalize teaching. While these methods are quite varied (differentiated teaching within classes, personalized supervision of students singly or in small groups, student mentoring, etc.), they have a twofold common characteristic: (1) learning difficulties are detected and dealt with rapidly, and (2) students in difficulty may receive personalized attention, but remain in their class with their peers. They do not retake the year and are not guided towards a less demanding track. These methods mean that the organizational activity of schools needs to be flexible. For example, it is not uncommon for two teachers to work together within a single class. While one takes care of the group as a whole, the other pays close attention for a fixed period to a small group of students with specific difficulties. In addition, classes quite commonly consist of several sub-groups of students engaged in different tasks.

### *Empirical studies based on Mons’s classification*

Taking the PISA 2000 data on reading literacy, Mons tested the relation between the foregoing mixed ability management models and various indicators of student learning attainment (average scores of students, the proportion of those in difficulty, the proportion of exceptionally able students, and differences in their scores and social inequalities in attainment). So as to compare countries that were sufficiently similar in terms of their development level, she

focused her enquiry on all OECD Member States with the exception of Mexico.<sup>27</sup> Her findings are reviewed below.

In countries that have adopted the ‘separation model’, there is a large proportion of less able students, and differences in the scores achieved by students and between schools are substantial. Social inequalities in attainment are especially high. Furthermore, as far as effectiveness is concerned the level is generally low (Mons, 2007), even though early selection and the channelling of students into paths adapted to their ability are supposed to maximize the performance of the education system. The average scores obtained by countries that rely on this model are significantly lower (the difference is around one quarter of a standard deviation) than in countries using the ‘flexible integration’ and ‘personalized integration’ models.

The studies by Mons also reveal that there are big differences between the three models with a long common core.

The ‘flexible integration’ model is typified by high attainment levels, big differences in student scores and scores substantially influenced by social background. This system is quite flexible: it involves groups within classes in primary education, relatively flexible class-based or other forms of ability grouping (often by subject) in secondary education, and frequent use of differentiated teaching. According to Mons, this is why it manages to raise the attainment of the least able students to quite a high level, while still offering excellent provision to the strongest.

The ‘personalized integration’ model characteristic of the Scandinavian countries tends to result in high average levels of performance, a small proportion of students with difficulties, and a very competent elite group. Furthermore, the relation between the scores of students and their social background is much less marked than in the previous (‘flexible integration’) model. Mons considers that this is attributable to the very extensive reliance on personalized supervision of students (which means that learning difficulties can be rapidly dealt with) and to the very few classes grouped by ability.

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27. Mexico was not included because its per capita GDP is well below that of other OECD countries.



Finally, the ‘uniform integration’ model seems to be the least effective of the four: there are many students of low attainment and few who do really well. Mons claims that this is the result of the poor strategies chosen to deal with students of mixed ability, mainly involving repeated years and, to some extent, class-based ability grouping.

Dupriez, Dumay and Vause (2008) have used Mons’s classification to carry out a secondary analysis of the PISA 2003 database (scores in mathematics), primarily for the purpose of identifying the paths of students through school and the academic attainment of the weakest in a variety of education systems.<sup>28</sup> To a large extent, their findings have borne out those of Mons, which were based on PISA 2000 and scores for reading literacy. In particular, they reveal that the ‘separation model’ is the most socially inequalitarian. As regards the performance of students whose attainment was lowest (at the 25th percentile on the PISA scoring scale, in each country), the ‘uniform integration model’ had the poorest result: a statistically significant difference was noted between this model and both the ‘flexible integration’ and ‘personalized integration’ models.

Clearly, these general trends occasionally conceal characteristics peculiar to each country. For example, out of all the countries that have adopted the ‘flexible integration’ model, the United States is the one with the highest level of social inequality in attainment (and by a very clear margin). Why is this so? The reason probably lies in characteristics which Mons’s classification does not take directly into account. In this country, there is extensive residential segregation (Reardon and Yun, 2001), which goes hand-in-hand with big differences in school composition and in the quality of education even if, from a formal standpoint, these schools offer the same kind of provision and are all ‘*comprehensive schools*’ (LeTendre, Hofer and Shimizu, 2003).

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28. Their study also covers the OECD countries. However, they did not include Turkey or Mexico, whose school enrolment rates for those aged 15 (54% and 58% respectively) are much lower than in the other countries (generally 100%), which means that the comparison between these student samples is highly problematic.

As Monseur and Demeuse (2001) suggested, this last study illustrates the need to take account of the ‘communicating vessels’ principle affecting the variables used to cater for students of mixed ability. Dupriez, Dumay and Vause (2008) once again demonstrated this in examining the case of students who repeated a year in lower secondary education. In the ‘uniform integration’ model, the students who retake a year are clearly the weakest. In contrast, in the ‘separation model’, those in difficulty take the year again or are guided towards a non-academic track. In this case, repeating a year seems to be far less indicative of student attainment. Similarly, the differences between students who do and do not repeat their year are not nearly as great in countries that adopt the ‘separation model’ as in those with the ‘uniform integration model’.

In short, the classification offered by Mons is of twofold interest. First, it means that one can go further than a dichotomous representation of education systems, hinging on a distinction between countries that introduce tracking early on and the remainder. It draws attention to other strategies that also serve to cater for students of mixed ability (repeated years, class-based or other ability groups, personalized supervision of students) and whose use is combined with tracking to a greater or lesser extent. Second, when the classification is used to understand the differences between education systems in terms of effectiveness and fairness, it confirms findings from earlier work: systems that introduce tracking at an early stage are those in which learning attainment depends most on sociocultural background. Furthermore, by offering three different models based on a ‘long common curriculum’, Mons’s classification provides for more accurate identification of trends in terms of effectiveness: countries which constantly require students to repeat their year are not very effective, especially where the least able are concerned.

### *Feasible policies*

The ‘personalized integration’ model which exists in Scandinavian countries as well as certain Asian countries (Japan and Republic of Korea) is of particular interest. It is mainly noteworthy for embodying a culture of integration (Crahay and Delhaxhe, 2004): school as a public institution is conceived and organized so that the greatest possible number of young people receive high-level

education and training, and also contribute to the growth of social cohesion. Children and young people go to school to acquire knowledge, but also to learn to live as members of a community and achieve fulfilment as individuals; in this respect, selection at an early age appears almost incongruous. It is hardly surprising, therefore, that this model totally precludes early tracking, repeated years or classes grouped by ability. Instead, it offers arrangements for diagnosis, supervision and prompt remedial activity. These offset learning difficulties and allow students to remain within their group or class. Furthermore, the savings achieved by ending or limiting the need to repeat a year are used to invest in such arrangements. As a result, these do not necessarily represent an additional cost to the community.

Education systems based on this model manage not just to raise the academic attainment of the least able students to a high level, but also exhibit very high average attainment scores. Following secondary analysis of the PISA 2006 data, Monseur and Lafontaine (2009) showed that the states in which student attainment correlates least with social background tend to be significantly more effective. 'It is possible to be both effective and fair. This applies not just to the majority of the Nordic countries (including Finland and Iceland), but also to the Asian countries (Japan and Republic of Korea) and several English-speaking countries such as Australia, Canada or New Zealand' (Monseur and Lafontaine, 2009: 143).

Studies comparing education systems in most cases rely on indicators based on data about the knowledge acquired by students and their progress at school to the age of 15. These can be used to relate features of education systems with indicators on how knowledge at that age is distributed. Yet, as Duru-Bellat (2002) points out, they tell us nothing about academic or professional inequalities that may emerge later. Other factors such as the employment rate, conditions for entry to higher education, and the significance of educational qualifications in securing access to employment, and so on, have a substantial influence on careers and ultimately perpetuate inequalities in a society. Thus, education systems that seek to keep all students together for as long as possible work towards ensuring equality in terms of academic attainment in compulsory education; however, it does not follow that these systems are also conducive to

greater equality in society, especially where access to employment and intergenerational social mobility are concerned.

Here, it is important to emphasize the effort made by Brunello and Checchi (2007) to pay attention to the impact of school organizational structure, not just on education indicators, but on other indicators concerning labour market access and adult skills. Their research was based on secondary analysis of a variety of international databases.<sup>29</sup>

As regards education indicators, their work confirmed trends identified in other earlier studies: intensive use of tracking (with selection at an early age affecting a large proportion of students) is associated with substantial social inequalities in attainment levels, as well as in progress through school and access to higher education. In the case of other indicators, it would appear that education systems that organize intensive vocational provision at an early stage are more socially egalitarian in terms of access of adults to continuing education and adult literacy levels, as measured, for example, by the International Adult Literacy Survey (IALS). In other words, in countries with tracking in secondary education, adult skills attainment and access to continuing education depend less than elsewhere on social background. As regards occupational income, it would appear that countries with systems in which tracking is used sparingly are those in which the influence of social background on income is weakest. On the whole, this assessment of the long-term impact of tracking does not undermine previous findings. Furthermore, it has revealed that social inequalities in access to education or training are later reflected in income inequalities, and are more widespread in countries in which tracking is provided intensively at an early stage. It has also shown that systems with tracking correspond to environments in which all types of workers have access to continuing education, a situation which appears to affect the level of adult skills.

All the studies discussed in this chapter will doubtless prompt educational administrators to attach greater importance to

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29. International Adult Literacy Survey (IALS), International Social Survey Programme (ISSP), European Community Household Panel (ECHP) and PISA 2003.

comprehensive-type organizational structures and, more particularly, to think in terms of the 'personalized integration' model. Nevertheless, there is a need for caution as regards the ability of those responsible to appropriate a model imported from elsewhere. From this standpoint, it is helpful to bear in mind two barriers faced by any policy for consolidating or extending the common core. The first concerns the educational difficulties inherent in any such proposal, and the second its social legitimacy.

The educational aspect of this problem is far from insignificant, even though there is often a tendency to underestimate it. Requiring that teachers work in the same classes with all students until they reach 15 or 16 years of age unquestionably makes their job more complex. Their bewilderment certainly contributes to resistance in countries such as Belgium or Switzerland, in which the question of extending the common core curriculum periodically reappears on the agenda. The customary reaction of educators to this issue is to urge remedial activity alongside differentiated teaching and cooperative learning within classes. While such suggestions are definitely pertinent, it is vital for their credibility that they should be backed up by (1) practices tried and tested in the classroom with teachers, if possible in a variety of different social contexts, and (2) a set of resources for teachers, including time, instructional aids, and equipment adapted to this conception of school activity. Meanwhile, as the Scandinavians have generally recognized, the administration of mixed ability groups/classes requires changes both to school infrastructure (a class prepared for differentiated teaching should have several adjacent areas at its disposal) and to the principles governing the division of labour (at certain points, several teachers may work with the same class on a collaborative project) so that they are compatible with a more flexible version of the group/class format.

At the same time, there must be a recurrent effort to justify the approach. The question of whether the core curriculum should be extended or maintained involves aspects other than the objective factors and special arrangements referred to above. It is bound up with perceptions, values and common standards from which existing educational structures derive their relevance. Bearing in mind the neo-institutionalists (Powell and Di Maggio, 1991; Draelants,

2009), reference might be made to cognitive and normative systems that affect the nature of thought and action within the context of school. In this sense, the characteristics of an education system are indicative of the values of a society and the way it has defined the role of its schools. Simply importing a structural characteristic (such as the duration of the core curriculum) is problematic, for this must be supplemented by simultaneous and far more complex work to ensure that all those concerned at a school grasp the significance of such a change. Yet, strategies of this kind do not necessarily secure a consensus either within schools or among the general public. In some respects, they even run counter to the competitive principles of liberal societies. Achieving a legitimate common curriculum thus unquestionably involves cultural and political endeavour, focused on the ultimate purpose of schools and on their contribution to greater equality of access to knowledge.

## Conclusion

This book has acquainted its readers throughout with broad summaries of the literature on the formation of classes within schools, as well as on segregation among schools and on the influence of tracking in lower secondary education.

What can be learnt from research on the formation of classes? Experimental studies have revealed that, in an environment whose teaching patterns are strictly controlled and identical across all groups, the learning attainment of each pupil or student is on average unaffected by the other students in the class or school. The general observation from this research, whether experimental (with the random distribution of individuals among groups) or quasi-experimental (when individuals in groups are matched), is that grouping classes by ability has no positive effects either for the students as a whole or for just some of them in particular. Overall, it concludes that there is no peer effect. At first sight, these results are hard to understand if considered alongside those from similar research carried out in real-life situations – in classes and schools which have continued their work as usual while allowing researchers to access them. Almost without exception, studies in this natural kind of setting have concluded that a group learning influence exists; in most cases, this is a positive influence arising from the fact that students are taught in a class at a high academic level. These studies reveal in fact that classes grouped by ability appear to have a differentiated impact. The ablest students when grouped together gain from positive stimulation. Under the same circumstances, the least proficient do not benefit from this impetus imparted by a strong class. All in all, the disparities between these two categories of student tend to grow. Such effects – positive for some and negative for others – are similar in magnitude, which explains why in most studies no significant general impact is observed for students as a whole.

It was research of a more ethnographic nature that first led to an understanding of the difference in findings from experimental research and quantitative research in a natural setting. It revealed the

## Conclusion

extent to which in natural situations patterns of instruction may vary, depending on the level of classes. In the weakest classes, real working time is shorter, the real curriculum is less ambitious, teachers have lower expectations and the working atmosphere is more disruptive, even if the curriculum and aims are the same as in other classes.

By and large in a natural situation, and in so far as there is co-variance between the level of the class and several factors affecting teaching quality, researchers consider that it is advantageous to be taught in a high attainment group. On the basis of these results, the great majority of scholars suggest that classes grouped by ability should be discontinued, as they lead to no increase in the average performance of education systems. Instead, they tend to widen the attainment gap between students. Furthermore, grouping together those of lowest attainment is instrumental in creating situations that are hard to manage from a social and educational standpoint.

In adopting different approaches and without using any experimental design (far more complex to construct at the school level), work in the field of *school effectiveness research* has led to increased understanding of how the composition of a school influences student learning. As a result of these studies and fairly complex methodological designs (such as use of structural equations or regression model rotation), it is now possible to distinguish between a direct compositional effect (corresponding to a peer effect) and an indirect effect (the school composition influences the quality of teaching which in turn influences the quality of learning). This explanatory principle is the same as that used at class level. Some authors (such as Opdenakker and Van Damme, 2001) have viewed this issue in terms of a specific compositional effect (the peer effect) and a combined effect referring to the joint effect of composition and the practices adopted by school teaching staff. They also conclude that such practices have their own specific impact, independent of school composition.

However, it cannot be denied that, despite the foregoing interpretative research, there is still no absolute consensus among scholars about the existence and scale of such an effect. All future efforts to obtain a complete picture will doubtless have to pay greater attention to the institutional settings in which such research



is conducted. Faced with relatively varied results and effects that are far greater in some countries than in others, it may reasonably be assumed that certain features of education systems are conducive to the development of a compositional effect. Noteworthy among these are: (1) the existence of major differences in composition among schools,<sup>30</sup> (2) substantial school curricular autonomy, meaning that individual teachers can adjust more freely to their students, and (3) little or no dependence on standardized external examinations whose purpose is partly to remind all teachers (no less than their students) about the common goals of an education system. In short, the compositional effect may increase, the more schools are segregated and the less their teaching activity is mapped out in the same universally standardized way (mainly involving external examinations to assess students). This theory remains to be empirically tested.

Finally, if it is now assumed that the compositional effect is clearly demonstrable, at least in some countries, it is all the more important to think about the most appropriate policies for allocating students to schools. In this respect, the end of *Chapter II* provides an overview of quantitatively oriented research concerned with examining (artificial) markets in school education. Such research is particularly hard to carry out in that neither institutional arrangements nor the analytical categories used by researchers are ever exactly the same. For example, Mons (2007) has decided to focus on two different investigations. The first deals with methods for assigning students to schools (in the public sector), and the second with the size and status of the private sector. From these, she concludes that neither the principle of free choice (in the public sector), nor the extensive presence of education run by private entities is conducive to the effectiveness of education systems. However, when family preferences and the private sector are not guided by limiting factors and public regulation, she notes a higher level of inequality in student attainment than in other countries. The studies by Gibbons in England and the overview offered by Maurin (2007) reach similar conclusions and prompt a critical discussion about the application of

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30. It is clear that if differences in school composition are very slight (as in the case of the Scandinavian countries), it will be hard to identify their effect.

## Conclusion

market principles in the field of education. As regards comparative study of the effectiveness of education systems, it should be noted here that there is no full consensus in the literature. In particular, work undertaken by Woessmann (2007) involving secondary analysis of international databases concludes that a significant share of schools managed by private providers have a positive impact, which is greater still if these schools are funded by the public authorities. This applies to Belgium and the Netherlands, in which the vast majority of private schools are publicly funded denominational institutions to which all families can send children without paying enrolment fees.

The final chapter of this book has dealt in particular with tracking as just one possible method of catering for mixed ability students in compulsory education. It identified one point about which consensus exists in the research literature, namely, that tracking students in different kinds of provision at an early stage gives rise to major inequalities in attainment between them and to social inequalities in attainment that are especially far-reaching. However, the book also revealed that, among education systems in which students form a curricular common core until the age of 15 or 16, there are big differences in catering for mixed ability and, in particular, in strategies for helping students with learning difficulties. Countries which make frequent use – as an adjustment variable – of provision for students to retake their year are those whose weakest students have the poorest results. Depending on the reference subject (reading literacy in PISA 2000 and mathematics in PISA 2003), the relatively inegalitarian effects of working with classes grouped by ability in secondary education are very different, and in any event more striking in the case of reading literacy (Mons, 2007). Furthermore, the natural tendency of such classes to accentuate inequalities among students (even if this is less marked than in systems which track them early) is fairly consistent with the conclusions concerning the effects of these classes in *Chapter I*. Overall, the most clearly promising strategy in terms of effectiveness and fairness is the one referred to by Mons as a ‘personalized integration model’: it eschews tracking and repeated years, and advocates remedial work and the personalized supervision of students with learning difficulties.

Even if in the final analysis it is hard to compare highly contrasting education systems and mechanisms, the present study has provided a means of identifying similarities between methods of grouping students and their impact. It is hoped that readers will have a better understanding of the range of different options and their consequences. However, as was emphasized at the end of *Chapter III*, it would be naive to suppose that the various models of education systems can be imported from one country to another and are readily interchangeable. Each has evolved in a particular society, with its own players, priorities and history. Conversely, any refusal to learn from observing and analysing the approaches preferred in other parts of the world would be purely conservative. In this sense, comparative education can be a source of insight and change, provided it takes into account the complexity of educational systems and practice and accepts the need to go further than formally borrowing a system adopted elsewhere. Action to alter the way classes are constituted or processes for assigning students to schools or, more broadly still, the methods of catering for mixed ability are not without educational implications (teachers must be guaranteed supervision and support for any radical change in the education system to succeed). Furthermore, such action means reconsidering the division of labour among teachers, the symbolic representation of schools, and the values underlying the whole purpose of education. Continued work on these hidden aspects of educational activity is doubtless vital if changes are to succeed.

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## The author

**Vincent Dupriez** is a professor of education at the Catholic University of Louvain (UCL, Belgium). His research interests include educational policies and organizations, as well as comparative analyses of educational systems. He recently co-authored, for Peter Lang Publishing (Exploration series, 2008), *De l'école au marché du travail : l'égalité des chances en question*.

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