

# Handbook on Measuring Equity in Education

**Chiao-Ling Chien**, UNESCO Institute for Statistics  
**Friedrich Huebler**, UNESCO Institute for Statistics

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*In line with UNESCO aims since 1946, namely that education is everyone's right, Silvia Montoya, director of the UNESCO Institute for Statistics (UIS), promoted this handbook to encourage equity in education as an active and tangible process that can be monitored. This is exactly what we deem today as a "crucial ambition". The handbook is organized in 6 parts, that from theoretical assumptions and methodology issues to national planning for equity in education, provides resources, both theoretical and practical, to overcome even the most common educational gaps. As stated in the introduction by Chiao-Ling (Claire) Chien, Education specialist, and Friedrich Huebler, the Head of the Education Standards and Methodology Section of the EIS, "meritocracy, minimum standards, impartiality, equality of condition and redistribution" are the pillars of a classification of measures of equity.*

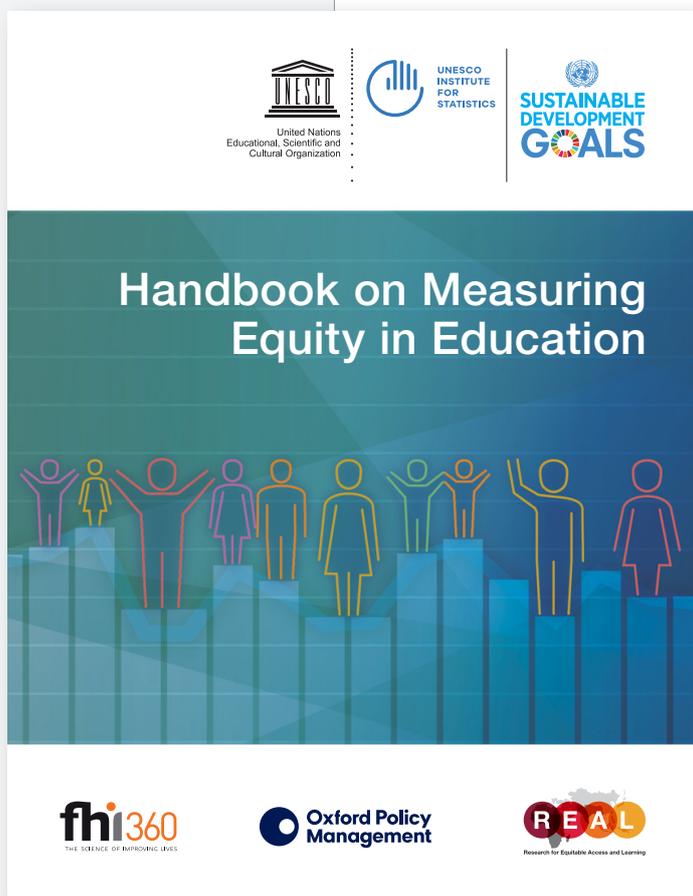
*A rich and detailed bibliography, a plethora of graphs and structured data feature every chapter, making the handbook quite a necessary tool for experts in the field. We are pleased to publish, for divulgation purposes, the Introduction of the handbook and sincerely thank the authors for allowing us to reprint it (Note of the Italian Editor).*

## Introduction

### *Relevance of equity in education*

Education has long been recognised as a basic human right. It is a critically-important requisite for the productivity and well-being of individuals and for the economic and social development of entire societies. Because of this, the importance of equal access to education has been emphasised repeatedly in international conventions.

*The Universal Declaration of Human Rights of 1948 and the International Covenant on Economic, Social and Cultural*



*Rights of 1966* state that education shall be equally accessible to all on the basis of merit and individual capability (United Nations, 2017b; 2017a). Access to education and learning outcomes should not be affected by circumstances outside of the control of individuals, such as gender, birthplace, ethnicity, religion, language, income, wealth or disability.

Beyond the issues of fairness and basic human rights, there is ample evidence demonstrating the economic and social benefits of education (UNESCO, 2014a). Work linked to the human capital theory and returns on investment in education has shown that increased educational attainment is associated with higher personal earnings, reduced poverty and higher growth rates of national income (Becker, 1975; 2002). Other studies have examined not only the economic but also the social benefits of education (McMahon, 2009; Stacey, 1998; Vila, 2000). Having more years of education is associated with better health, reduced maternal and child mortality, fewer disaster-related deaths, less conflict and increased civic engagement, among other benefits. With the adoption of the Sustainable Development Goals (SDGs) and the Education 2030 Framework for Action in 2015, equity has been placed at the heart of the international development agenda for the first time. In the domain of education, SDG 4 calls on all UN Member States to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (United Nations, 2015). Several targets under SDG 4 aim for equal outcomes for all population groups, including girls and boys, and women and men, but also other groups. Gender parity was already a prominent target in the Millennium Development Goals (MDGs) adopted in 2000, but the SDGs go beyond this narrow focus. Target 4.5 is most explicit in its focus on equity and its determination to “eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations” (United Nations, 2015). Target 4.5 commits all UN Member States to addressing all forms of exclusion and inequalities in access, participation and learning outcomes, from early childhood to old age.

### *Knowledge gaps and intended use of the handbook*

Greater equity and inclusion in education cannot be achieved without increased efforts to collect and analyse data on the most excluded segments of the population (UNESCO, 2014). Yet, three years after the adoption of the SDGs in 2015, education data are often still incomplete and many of the most marginalised groups remain invisible in statistics at national and global levels.

Both administrative data systems and household surveys tend to lack data on certain populations. These include, for example, persons displaced by conflict, children in child labour and other vulnerable situations, nomadic populations or students attending non-standard forms of education. In addition, students with disabilities or with limited proficiency in the language of the assessment are being excluded from participation in cross-country learning assessments, including the Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), and Programme for International Student Assessment (PISA). Moreover, schools that are located in remote regions might also be excluded from those assessments (OECD, 2016; Schuelka, 2013). In household survey data, high variance in indicator estimates for small population groups – such as members of ethnic, linguistic and religious minorities – is another important challenge (UIS, 2016). This lack of comprehensive data makes it difficult to identify groups that may not be reaping the full benefits from education because of restricted access and insufficient learning. In addition, the indicator framework for SDG 4 has not been fully developed. Lessons learned from

the experience of monitoring the Education for All (EFA) targets suggest that to track progress each SDG target should be measurable, with the associated indicators and data sources identifiable at an early stage (Rose, 2015). The Education 2030 Framework for Action therefore mandates the UNESCO Institute for Statistics (UIS) to work with partner organizations and experts on the development of new indicators, statistical approaches and monitoring tools for the assessment of progress towards SDG 4 (UNESCO, 2016).

This handbook, produced by the UIS in collaboration with FHI 360 Education Policy and Data Center, Oxford Policy Management, and the Research for Equitable Access and Learning (REAL) Centre at the University of Cambridge, is intended as a reference for analysis and interpretation of education data. It is aimed at professionals involved in the measurement and monitoring of equity in education, which includes not only those working on the SDGs but also any stakeholders in the field of education: technical staff in ministries of education and national statistical offices, education practitioners, members of nongovernmental organizations (NGOs) active in the field of education and researchers. Although users of the handbook are expected to have basic statistical knowledge and some familiarity with equity issues and indicator calculations, the subsequent chapters develop and review basic material for the respective topics.

The handbook is inspired by the SDGs and Education 2030 but is not limited to an examination of the proposed indicator framework for the 2030 goals.

Instead, it is designed to be suitable for any national analysis and monitoring of equity in education and progress towards national goals. The handbook is primarily concerned with national policymaking and focuses on inequalities within countries. While these inequalities must be addressed to achieve the education SDG, their elimination is a goal worth pursuing independent of the international development agenda.

There is already a large volume of work dedicated to measuring equity, and much of this work is founded in analysis of economic inequality (e.g. Atkinson, 1970; Atkinson, Marlier, 2010; Cowell, 2011; Dalton, 1920; Roemer, Trannoy, 2016).

Important milestones include the development of the Lorenz curve and the Gini coefficient more than 100 years ago. These and other approaches first used in economics were subsequently applied to health and education.

The issue of inequity in education has been examined from different angles, including inputs, processes, outputs and outcomes, as well as in various contexts (e.g. education systems, providers and learners). These issues have been covered in many of UNESCO's *Global Education Monitoring Reports* since 2002. The 2005 Report (UNESCO, 2004) included a framework for assessing education quality, with attention to equity, and the 2013/4 Report (UNESCO, 2014) provided an in-depth assessment of the ways in which teaching and learning processes need to change to leave no one behind. Other UNESCO publications have highlighted gender inequality (UNESCO, 2012; UIS, 2017) and examined the reasons for exclusion from education (UIS, UNICEF, 2015).

Data collection must be improved to allow identification of excluded groups and more precise calculation of indicators that can serve as evidence for the design of targeted policy interventions. Detailed advice on collection of data is beyond the scope of the present handbook, but it does make the point that high-quality data fit for disaggregation are an essential prerequisite for analysing equity. Learning is a lifelong process and the measurement of equity in education should consider all ages and levels of education. Because inequity in education can accumulate over time, measurement must start in the earliest grades of a country's education system and even in pre-primary education.

Indeed, the aspirations of SDG 4 are holistic and cover learning opportunities throughout the lifecycle, from early childhood to adulthood and old age. Focusing inequality research on a single level of education ignores the process of accumulating disadvantage throughout the education cycle. Therefore, it is necessary for education planners to take an integrated approach to investigating inequity accumulated at each transition point between education levels and to develop aligned policies and measures (Chien, Montjourides, van der Pol, 2016; Reisberg, Watson, 2010).

Even if the analysis focuses on existing disparities within a country, there is a need to define common metrics and standards to ensure reliability and international comparability of the results. Efforts to develop international standards in support of global monitoring are among the core elements of work in the context of the SDGs, but they also pose some of the biggest challenges (UIS, 2016). This handbook aims to contribute to the debate by proposing standard approaches and tools that could be used by all practitioners in the field.

### *Overview of the handbook*

This handbook addresses some of the knowledge gaps outlined above. Specifically, it provides a conceptual framework for measuring equality in learning; offers methodological guidance on how to calculate and interpret indicators; and investigates the extent to which measuring equity in learning has been integrated into country policies, national planning and data collection and analysis.

Chapter 2 of the handbook presents a conceptual framework for equity analysis, with an emphasis on equity in learning. It begins with a summary of the philosophical literature on equity and highlights several related principles, including equality of opportunity and considerations of fairness and justice, as these relate to the distribution of education resources to compensate for unequal starting points. The chapter then proposes five categories for the classification of measures of equity: meritocracy, minimum standards, impartiality, equality of condition and redistribution.

The chapter concludes with a summary of the desirable properties of equity measures.

Building on the conceptual underpinning presented in Chapter 2, Chapter 3 describes different methods for measuring equity in education. It focuses on key univariate and multivariate metrics and their respective advantages and disadvantages for two of the five categories described in Chapter 2: equality of condition and impartiality. Chapter 3 begins with an overview of visual representations of equality of condition that can be used to gauge the degree of inequality in a dataset, among them histograms, probability density functions and the Lorenz curve.

The chapter goes on to describe common metrics for measurement of inequality, organized by the kind of data to be analysed, the desired type of analysis and the type of equity measure. Chapter 3 concludes with an overview of data that can be used for analysis of equity, as well as some of the challenges that may be encountered along the way.

Chapter 4 moves away from the theoretical discussions in Chapters 2 and 3 and examines the role of equity measurement in 75 national education systems, in order to offer guidance to both policymakers and other stakeholders tasked with improving equity in education. The chapter begins with an analysis of national education plans from all geographic regions to identify the presence – or absence – of equity dimensions in indicators for monitoring of progress towards increased access and learning. Based on the findings, the chapter offers a series of recommendations for expanded data collection, with an increased focus on the identification of disadvantaged groups.

Chapter 5 discusses government spending as a means to increase equity in education. The chapter examines national data to assess which groups of the population benefit most from government

education expenditure and describes formula funding as a way to redistribute resources to those with the greatest need. In this context, the role of household spending on education and the potential of national education accounts as a tool to identify and address inequities are also discussed. Chapter 6 concludes the handbook with a summary of the main findings and recommendations for future work on national and international education statistics.

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