



**E**uropean **E**xpert **N**etwork on  
**E**conomics of **E**ducation (**EENEE**)

## **Equity in and through Education and Training: Indicators and Priorities**

EENEE Analytical Report No. 12  
Prepared for the European Commission

Daniel Münich, Erik Plug,  
George Psacharopoulos and Martin Schlotter  
February 2012

# 12



# **Equity in and through Education and Training: Indicators and Priorities**

*February 2012*

*Analytical Report for the European Commission prepared by the  
European Expert Network on Economics of Education (EENEE)*

*Authors: Daniel Münich, Erik Plug, George Psacharopoulos and Martin Schlotter*

*Education then, beyond all other devices of human origin, is the great  
equalizer of the conditions of men, the balance-wheel of the social  
machinery.*

Horace Mann

## Table of Contents

1. Introduction .....	4
2. Concepts .....	5
3. Main Areas of Inequality - Measurement and Indicators .....	8
3.1 Gender Inequality .....	8
3.2 Inequality due to Immigration .....	11
3.3 Inequality between Individuals with different Sexual Orientation .....	12
3.4 Inequality due to different Family Background .....	13
4. Reasons of Inequality, Discrimination and the Role of E&T Systems .....	15
4.1 Reasons for Gender Inequality .....	16
4.2 Reasons for Inequality due to Immigration .....	18
4.3 Reasons for Inequality between Individuals with different Sexual Orientation .....	19
4.4 Reasons for Inequality due to different Family Background .....	20
5. Policy Experiences from Member States .....	22
6. Recommended Indicators, Benchmarks and Data Availability .....	26
7. Conclusions .....	32
References .....	34

## List of Tables

<b>Table 1:</b> Equity-Related Terms in the Literature .....	5
<b>Table 2:</b> Female-to-Male Pay Gap .....	9
<b>Table 3:</b> Share of Females among Entrants at Tertiary Level (by Field of Study) .....	10
<b>Table 4:</b> Proportion of 20-24 year-olds who are not in Education and have not attained Upper Secondary Education (by Migrant Status) .....	12
<b>Table 5:</b> Countries Ranked by Average Parent-Child Schooling Correlation .....	14
<b>Table 6:</b> University Students by Father's Socioeconomic Status (SES) .....	15
<b>Table 7:</b> European Education Indicators and Benchmarks .....	26
<b>Table 8:</b> A Recommended Indicators Shortlist .....	27
<b>Table 9:</b> Educational Attainment of the Population and Income Inequality .....	30

Opinions expressed in this report are those of the authors alone and do not represent the point of view of the European Commission.

## Appendix

<b>Table A1:</b> School Design Across Countries .....	39
<b>Figure A1:</b> Types of Legislative Frameworks for Gender Equality in Education .....	40
<b>Figure A2:</b> Specific Vocational Guidance to challenge traditional Career Choices .....	40
<b>Figure A3:</b> Guidelines on Gender Issues for Authors of Educational Texts .....	41
<b>Figure A4:</b> Level of Publication of written Information on School Systems in the Language of Origin .....	41

## 1. Introduction

This analytical report is written in the context of the 2010 European Year for Combating Poverty and Social Exclusion. In May 2009, Member States agreed on a strategic framework for European cooperation in Education and Training (E&T) up to 2020 (European Commission 2009a). Equity is one of the four objectives of this framework. Under this heading, the Member States identified priority areas of work on early leavers from E&T, pre-primary education, migrants and learners with special needs.

The June 2010 European Council emphasized the objective of promoting social inclusion through the reduction of poverty and the need for quantification of education and social inclusion/poverty indicators (European Council 2010). The target population is defined as the number of persons who are at risk-of-poverty, material deprivation and jobless household.

EENEE and NESSE have already produced several reports that address issues of equity (EENEE 2006, 2007, 2008, 2009a; NESSE 2008a, 2008b, 2009). This analytical report takes a fresh look at the subject with focus on how issues of equity and social inclusion are addressed in the economics of education.

After attempting to clarify conceptual issues the paper presents several sub-dimensions that might be relevant with regard to equity and social cohesion in E&T. Without considering their discriminatory substance, we show how inequalities in these sub-dimensions can be measured and which educational outcomes are mostly affected. In the next step, we try to identify the crucial (discriminatory or non-discriminatory) elements that lead to such inequalities, thereby looking at all levels of E&T systems<sup>1</sup>. The paper continues with an overview on feasible policies in Member States that have already revealed as successful or promising in tackling inequity and discrimination. This leads in the end to the recommendation of the most decisive indicators and an overview on existing and still required data for monitoring the equity and social inclusion performance of E&T systems.

---

<sup>1</sup> We mainly leave out the tertiary level, especially the discussion about inequalities in university access. This is addressed in a separate report of EENEE conducted by Reinhilde Veugelaers.

## 2. Concepts

In general, issues of social cohesion, equity and discrimination in E&T are being studied by researchers in three major behavioural sciences - economics, sociology, and psychology. While the paradigm, terminology, and empirical approaches across those fields still differ a lot, there is a growing trend of interdisciplinary discussion and mutual learning making grounds for multidisciplinary research providing new richer insights on complexities of the subject. In economics and in the economics of education in particular, the analysis of these concepts has a long tradition. Back in 1972 the home journal of the University of Chicago where human capital originated devoted a special issue titled “Investment in education: The equity-efficiency quandary” (Schultz 1972). In later years the same basic concept of equity appears in the literature in many different flavors such as poverty, social inclusion/exclusion (Lenoir 1974), or capability deprivation (Sen 1985) among many others. Table 1 provides a short list of related keywords appearing in the literature. The classification is not tight given the increasing blur between the disciplines.

**Table 1: Equity-Related Terms in the Literature**

Income inequality
Poverty
Capability deprivation
Discrimination
Gender inequality
Equality of access
Equality of opportunity
Equality of outcome
Social alienation
Social cohesion
Social exclusion
Social inclusion
Social rejection
Vulnerability
Equality of treatment
Lack of integration
Lack of participation
Marginalization
Ostracism

The probably incomplete list indicates the difficulty to come up with a very clear definition of equity, social cohesion and discrimination in the field of E&T systems. Many notions

probably mean the same while others already go beyond a basic definition and refer to special issues (for example gender) in this area or to outcomes affected (income inequality). This leads to a considerable overlap in the meaning of concepts appearing in Table 1. For example, if a student comes from a poor family, he/she is more likely to be excluded from a prestige high-quality school. On the other hand, the concept of social inclusion/exclusion is much wider than that of poverty, in the sense that a student may come from a relatively rich migrant family, but be socially excluded because of cultural differences in society, e.g. peers rejecting classmates with immigrant background. Poverty, joblessness and material deprivation are more easily quantified than social exclusion. We try to disentangle these intermixtures and overlaps between definitions, related issues and affected outcome variables starting with some basic conceptual considerations on equity and discrimination.

A major difference between the efficiency and equity concepts is that the former can be expressed in objective terms, whereas the latter requires some normative value judgment. For this reason, there is bound to be more consensus about the efficiency or inefficiency of a school system, than whether one is more or less socially inclusive. Equity or inequity presupposes some more or less universally valid ethical judgment on what is fair/unfair or socially acceptable/ unacceptable.

Some basic concepts of equity have to be stated as they have been thoroughly debated in the literature and summarized also in EENEE 2006: One can separate the concepts of *equity in opportunities* and *equity in treatment*.

*Equity in opportunities* requires that students of the same abilities face equal educational opportunities. It could still be that educational careers of equally able students differ due to their different priorities and tastes. Such system ensures that access to and outcomes of education are based only on individual's innate ability and study effort, and are not the result of personal and social circumstances, including of factors such as socioeconomic status, gender, ethnic origin, immigrant status, place of residence, age or disability. This is an example of meritocracy, i.e. the provision of equal opportunities for all, but acceptance of unequal outcomes because of differences in innate ability, effort or talent.

The *equity in treatments* is more restrictive requiring equal educational opportunities for all students irrespective of their abilities and/or preferences. Normatively set goals targeted by actual policies always represent some combination of these two notions of equity.

Often, equality in treatment is given greater weight at lower stages of education and stress on equality in opportunities is growing at higher stages of education.

These concepts of equity also imply a differentiated view on discrimination: Whether differential treatment is discriminatory or not depends on the type of equity assumed or required. In case of equity in opportunity, discrimination is a situation when students or their groups with identical abilities are treated unequally in a way that is related to their other characteristics. It should be kept in mind that even under equal treatment of equally able students one can observe different outcomes due to different preferences of individuals. In case of equity in treatment, discriminatory treatment is such that treats any two students (or their groups), irrespective of their different abilities and/or preferences.

In addition, discrimination can occur in different ways. While *explicit and intentional negative discrimination* can be relatively easily captured by properly set national institutional and legal framework, *unintended forms of discrimination* are usually hidden and complex so that their identification almost always requires detailed analytical insights supported by rich data processed by advanced econometrics techniques. Unfortunately, we will see in the next section that the more subtle *unintended forms of discrimination* are much more relevant in E&T systems.

From a personal point of view, *explicit and intentional negative discrimination* is mostly a matter of personal prejudice and taste of individuals from one group against members of another group, whereas *unintended forms of discrimination* often refer to statistical discrimination. This means that the discriminating party has imperfect information about abilities or other unobserved personal traits of discriminated individuals so that the treatment is based on expected (average) characteristics of the whole group. This is known from many other fields outside the education area, for example from insurance companies who calculate premiums according to the knowledge they have about groups (for example young people vs. old people). It is important to mention that statistical discrimination can occur without any prejudices of the discriminating party.

*Unintended institutional discrimination* is the most common type of discrimination in E&T within the EU. At the same time, this type of discrimination is difficult to detect and measure. We are convinced that among other types of discrimination, this type of discrimination can be treated (identified and diminished by policies) by the coordinated effort of EU 2020 agenda

and by limited portfolio of policy tools available at the EU level (monitoring, empirical research focus, mutual learning, etc.). It does not mean that we neglect the incidence of other types of discrimination which can certainly be found across MS.

In a first step, we will identify the most important fields of study in which inequalities with respect to important E&T outcomes appear. However, there might be several other issues which are also important but beyond the scope of this study. That is, one can think of the educational system or the allocation of resources, for example, which could also drive inequality in the E&T sector (see e.g. Machin (2006)). Thus, we particularly focus on the following four areas:

- **Gender Inequality**
- **Inequality due to Immigration, Racial or Ethnic Differences**
- **Inequality between Individuals with different Sexual Orientation**
- **Inequality due to Family Background**

If necessary, we will show which measures are used to identify inequality in the different fields (in some areas like gender, measures are quite obvious).

Inequality is multi-dimensional in that it encompasses several relevant outcomes (income, unemployment, skill levels, access to education etc.). This will be addressed by additionally providing some descriptive evidence on the indicators that are predominantly affected in the different areas mentioned above.

We still leave open whether the observed differences can be really attributed to some form of discrimination and will discuss that issue in section 4.

### **3. Main Areas of Inequality – Measurement and Indicators**

While we identify four separate major areas in which inequalities in E&T systems occur, it will become apparent that many overlaps exist. For example, ethnic and minority groups often also share a very low social background. Similarly, gender inequalities might be especially pronounced in special ethnic groups. This, on the one hand, complicates the analysis; on the other hand remediating policies discussed in later sections might be fruitful for several groups at the same time.

#### **3.1 Gender Inequality**

One main source of inequality in E&T systems is the different sex of individuals. While in the past, indicators rather hint at a disadvantage of female versus male individuals, there is in the

meantime enough evidence that claims a head start of girls and women (with respect to several dimensions) that could perhaps be due to some form of male discrimination.

However, the most prominent indicator showing differences between men and women is the still prevalent earnings gap. There are dozens of studies focusing on the analysis of the so-called *gender earnings gap*. Table 2 provides an overview across EU Member States on the difference between men's and women's earnings (in percent) from the year 2009. In all countries, male earnings are still higher than female earnings, ranging from more than 30 % in Estonia to 4 % in Italy. Moreover, in almost half of the countries the earnings gap is about 20 % and higher. While in this case the outcome is already after the time spent in regular education, the causes for the differences could be still part of elements in E&T systems. The raw earnings gap presented here can have many causes that we will discuss in section 4 when we analyse the reasons of the outcome differences.

**Table 2: Female-to-Male Pay Gap**

Country	Earnings gap	Country	Earnings gap
Estonia	31	France	17
Austria	26	Ireland	17
Cyprus	23	Hungary	16
Czech R.	23	Latvia	16
Germany	23	Bulgaria	13
Netherlands	23	Romania	13
Slovak Republic	23	Luxembourg	10
United Kingdom	22	Belgium	8
Greece	21	Poland	8
Finland	20	Portugal	7
Lithuania	20	Slovak R.	7
Denmark	18	Malta	5
Spain	18	Italy	4
Sweden	18		

Source: Based on Eurostat (2009), Figure 7.1. Note: The pay gap represents the difference between average gross hourly earnings of male employees and of female employees as a percentage of average gross hourly earnings of male employees expressed in percent.

Looking at field of studies and third level graduates by discipline and gender we find a male majority in technical and math-oriented fields, whereas women focus on less technical careers. Table 3 shows the proportion of females among new entrants at tertiary level by field of study. While in life sciences almost two-thirds among the students are female, in physical

sciences, mathematics and statistics and computing women are underrepresented in almost all countries.

**Table 3: Share of Females among Entrants at Tertiary Level (by Field of Study)**

<b>Countries</b>	<b>Life Sciences</b>	<b>Physical Sciences</b>	<b>Mathematics and Statistics</b>	<b>Computing</b>
Austria	65.5	30.8	37.7	18.8
Belgium	55.9	31.9	44.3	7.4
Czech Republic	69.4	46.4	48.4	15.8
Denmark	61.9	40.1	40.5	30.8
Finland	75.2	50.5	50.4	28.1
Germany	68.4	43.5	58.3	17.6
Hungary	61.2	37.7	39.1	20.2
Iceland	73.5	45.9	35.5	13.8
Ireland	69.6	49.3	46.9	24.4
Italy	67.0	41.6	48.5	13.2
Mexico	54.9	49.4	42.1	34.4
Netherlands	55.3	27.6	27.0	9.3
Norway	64.2	44.5	45.5	17.7
Poland	62.0	53.5	57.3	8.6
Portugal	68.0	51.2	54.1	17.6
Spain	63.8	45.0	48.5	14.2
Sweden	59.8	43.8	43.1	20.6
Switzerland	50.8	31.0	34.1	12.8
Turkey	53.4	37.3	44.0	31.6
United Kingdom	49.7	42.5	38.4	25.1
Estonia	72.9	35.9	70.1	22.6
Slovenia	76.2	52.2	66.8	13.3

Source: OECD (2009): Equally Prepared for Life – How 15-Year-Old Boys and Girls perform in School, p.57.

Other important outcomes, however, rather indicate female benefits. Psychological literature provides evidence on differences in intellectual attainment and progress of boys and girls during pre- and school years ages in different subjects. Cognitive and non-cognitive skills of boys and girls are different in terms of averages and variance and are revealed (appear) at different pace at different ages. As pointed out by Eurydice (2010), the earliest differences between boys and girls in attainment are revealed through falling behind in school and repetition of school years, which are more common among boys. Boys pre-dominate among early school leavers, while more girls receive an upper secondary school diploma. Girls usually obtain higher grades and higher pass rates in school leaving examinations, which, in turn, helps them to enter desired programs.

Machin and Pekkarinen (2008) summarize that in many countries girls show superior performance in school examinations which is reflected in higher rates of attendance of girls in tertiary education

Another feature attracting growing attention of empirical research in economics is different sensitivity to stress conditions by boys and girls. Growing experimental evidence indicates that women shy away from competition and are less effective than men in competitive environments, even if they perform similarly well in non-competitive settings. Recent empirical studies of applicants to highly demanded colleges in France (Bors et al. 2006), universities in the Czech Republic (Jurajda and Munich 2008) and others suggest that female applicants outperform their male colleagues in non-competitive comprehensive tests, but lag behind men in the highly competitive school admission process.

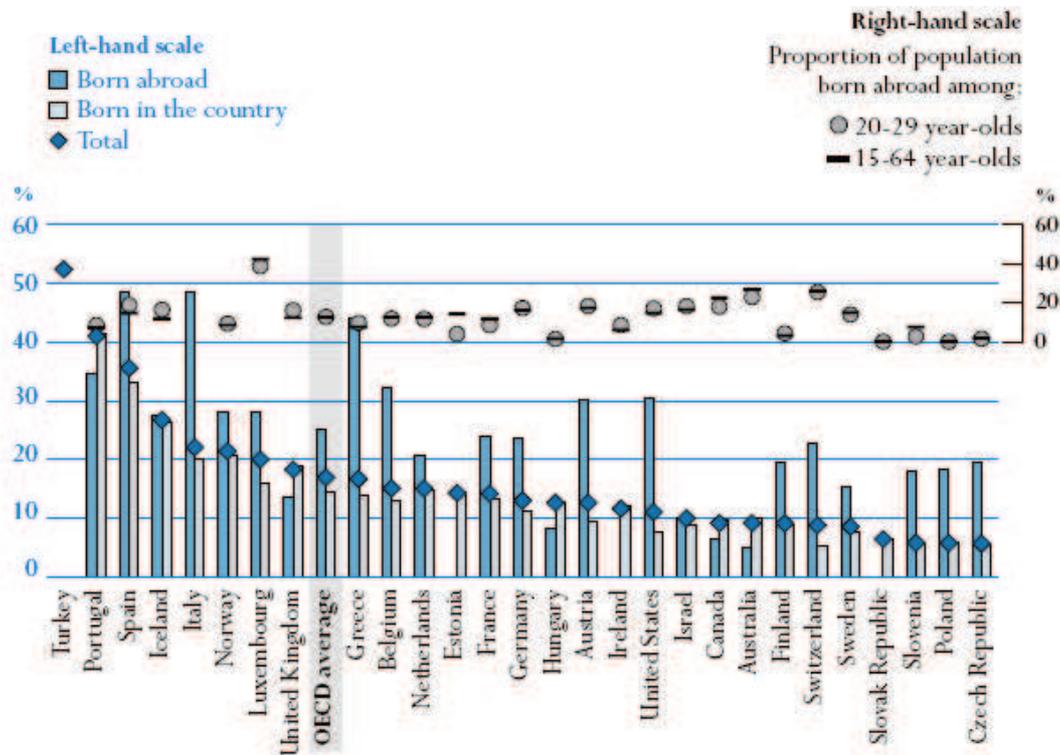
Which elements of E&T systems are responsible for the different gender outcomes in several indicators and to what extent differences really refer to discrimination and equity issues, is part of section 4.

### **3.2 Inequality due to Immigration**

Differences in relevant outcomes between racial and ethnic groups and/or immigrants could also suggest discriminatory policies and inequity of opportunity. In the US literature the analysis of racial inequality has a long tradition and achievement differences between several groups are still existent. Blacks earn twenty-four percent less than whites; Hispanics earn even twenty-five percent less. College enrolment is also much lower among these two groups compared to the white population (see Fryer 2010).

In Europe, similar indicators are at hand: A chart over several OECD countries (containing lots of EU Member States) demonstrates considerable differences between educational attainment by migrant status (see Table 4). On average, the share of 20-24 year-old who are not in education and have not attained upper secondary education among people born abroad is eleven percentage points higher than among those born in the country. In some countries like Austria, Czech Republic, Greece, Poland, Switzerland 20-24 year-old migrants have a three times lower probability to be in education or to have finished upper secondary school than those born in the country. In other countries, foreign born people perform even better in this indicator (for example Hungary, Portugal and the United Kingdom). To the extent that attainment differences can be attributed to some form of discrimination, a comparison of E&T systems between these groups of countries might bring crucial insights in discriminatory elements.

**Table 4: Proportion of 20-24 year-olds who are not in Education and have not attained Upper Secondary Education (by Migrant Status)**



Source: OECD (2010), p. 336.

Many other indicators would reveal differences in outcomes between natives and migrants/ethnic minorities. For example, a German study can provide evidence on different academic school placement after elementary school between natives and immigrant even if they have the same cognitive achievement (Luedemann and Schwerdt 2010). We will again address possible discriminatory reasons for these outcome differences in section 4.

### 3.3 Inequality between Individuals with different Sexual Orientation

It is only recent that economists began to focus on the relationship between sexual orientation and labour market relevant outcomes, in particular, the relationship between sexual orientation and earnings. Among the empirical studies, there are currently three sexual orientation measures in use. There are behavioural measures based on past sexual behaviour. For example, gay, lesbian and bisexual workers are defined to have more sex with same-sex than with opposite-sex partners, since the age of 18 (Badgett 1995). Others use variations thereof and define gay and lesbian workers as individuals who had sex with at least one same-sex within the last five years (Black et al 2003, Blandford 2003). There are behavioural measures based on partnership using information on the gender of the partner (Allegreto and

Arthur 1998; Black et al 2007; Arabsheibani et al 2005; Ahmed and Hammerstedt 2009). And there are measures of self-identified homosexuality (for example Plug and Berkhout 2004, 2008).

These measures do not fully overlap and may capture different aspects of the observability of sexual orientation. Within a labour market setting, for example, sexual orientation measures based on partnership appear much more relevant than measures based on past sexual behaviour, simply because it is much easier for employers to obtain information on the gender of the employee's partner, than on whom an employee spent his or her time in bed with. In addition, gender information on the cohabiting partner is much more widely available than information on (past) sexual experiences or on self-reported identity. But at the same time, sexual orientation estimates based on partnership also ignore all those workers who are single. Assuming that a substantial share of gays and lesbians is single and that finding a partner is somehow related to someone's unobserved endowments, it is quite likely that the same sexual orientation estimates based on partnership miss the true impact of sexual orientation on, for example, earnings.

Despite the variation among sexual orientation measures, three main observations emerge. The first one is that almost all the schooling estimates indicate that gays and lesbians are substantially higher educated than their heterosexual counterparts. The second one is that gay men almost always earn less than other men. The third one is that there is no clear relationship between sexual orientation and female earnings. Some studies find that lesbians earn less than other women, most notably among the US studies that use the General Social Survey, whereas the European studies (and a subset of US studies) report sexual orientation estimates that appear to be more consistent with the idea that lesbians earn somewhat more than other women.

### **3.4 Inequality due to different Family Background**

It has been well documented that individuals' family background plays a vital role in generating school and labor market success. In EENEE's first analytical report on "Equity and Efficiency in E&T Systems" this topic has been discussed very comprehensively (see EENEE 2006).

To study the link between family background and educational outcomes several relatively easily measurable aspects of the family have to be found. Typical examples of such family

background measures include parents' educational attainment, the father's occupational status, or measures of family income. Several reasons make parents' educational attainment the most important candidate. First, educational attainment typically precedes and strongly influences most common other background measures, such as occupational status, earnings and income. Second, education of parents is probably the most fundamental factor in explaining the child's success in school (Haveman and Wolfe 1995). Thus, parental education is also one of the most informative inputs to consider. Third, the number of empirical studies that aim to estimate the causal effect of parents' schooling on children's schooling is relatively large, and much larger than those studies that try to estimate the causal effect of parents' income.

Table 5 shows an overview on the association between parental schooling and child schooling. In all countries parental schooling is positively correlated with child schooling. A coefficient higher than 0.50 exists in Italy and Slovenia. This means that in these countries one year more schooling of the parents increases schooling of the children by more than half a year. Denmark's coefficient is the lowest with 0.3.

**Table 5: Countries Ranked by Average Parent-Child Schooling Correlation**

	Correlation	Rank
Italy	0.54	1
Slovenia	0.52	2
Hungary	0.49	3
Switzerland	0.46	4
Ireland	0.46	5
Poland	0.43	6
Sweden	0.40	7
Slovakia	0.37	8
Czech Republic	0.37	9
The Netherlands	0.36	10
Norway	0.35	11
Finland	0.33	12
Great Britain	0.31	13
Denmark	0.30	14

Source: Black and Devereux (2010), p. 72. The original table contains more countries and stems from Hertz et al. (2007).

Further statistics use the socioeconomic status of the father in order to analyze the effects of family background (Papanicolaou and Psacharopoulos 1979 in the UK, Patrinos 1995 in Greece, Mora 1999 in Spain and Ichino and Winter-Ebmer 1999 in Germany). They show that higher education students come from a higher socioeconomic status relative to the rest of the

population. Table 6 provides the Higher Socioeconomic Status (SES) representation index for several EU countries. This measure indicates the ratio of the proportion of students whose father has a university degree and the proportion of university degree holders in the population. A value of 1 means equal representation. The higher the index, the more unequal the system in the respective country.

**Table 6: University Students by Father’s Socioeconomic Status (SES)**

Country	Higher SES representation index
Germany	2.1
Spain	1.5
France	2.0
Ireland	1.1
Italy	1.8
Netherlands	1.6
Austria	2.6
Portugal	5.4
Finland	1.8

Source: Eurostudent (2005).

Some studies who work with international student achievement tests like PISA and TIMSS use an indicator of *books at home* in order to proxy family background (Peterson and Woessmann 2007, Woessmann 2008)

The presented indicators reveal the importance of several family background measures for different outcomes. However, it is premature to infer discriminatory elements of E&T systems from these correlations. A deeper analysis of the channels behind the correlations is necessary and will be part of the following section

#### **4. Reasons of Inequality, Discrimination and the Role of E&T Systems**

So far, we have demonstrated inequalities and outcome differences between several groups of the population with regard to crucial indicators like earnings, school attainment and other important factors. Yet, we have also been very reluctant until now in attributing all the differences to any kind of discrimination. This section studies the reasons for the outcome differences identified in section 3. On the basis of that analysis, we try to identify to what extent the inequalities really result from some form of discrimination and in which cases our ideas of discrimination do not apply. Considering all educational levels, we especially focus

on those discriminatory inequalities that are produced or can be affected and remediated by the design of E&T systems.

#### **4.1 Reasons for Gender Inequality**

Wages, field of study, skill levels in various subjects and different performance in admission tests have been documented as major indicators of outcome/performance differences between male and female individuals.

One reason for different skill levels of boys and girls during pre- and school years is different pace in the acquisition of cognitive and non cognitive skills and different ages at the appearance of certain skills. While this is well documented by psychological literature such discernible ability differences (skills and knowledge) can result in unequal treatment in the assignment to preferred and/or suitable types or fields at higher levels of education if school selection proceeds on competitive basis at younger ages. For example, advantages of girls in reading and literacy and male benefits in math can already be cemented at early ages by different selective school placement of boys and girls with focus on certain subjects. Later on, such early streaming can affect different fields of study and job and earnings differences between men and women.

Although aforementioned differences in treatment due to different abilities cannot ultimately be considered as discriminatory from the standpoint of equal opportunities (system treats equally skilled boys and girls equally), they may still have implications raising policy concerns. First, it may form different expectations and ambitions between group in question at earlier stages of education, affecting their school and field choices. Therefore, even seemingly non-discriminatory treatment can petrify inferior positions of particular gender on the labour market and more broadly in the whole society.

The same is true for differences in stress sensitivity. If girls just perform worse than boys because of the very competitive design of school admission processes and are otherwise equally disposed for studies, such a system can be seen as discriminatory with respect to our concepts of section 2.

Other studies relate early skill differences to gender combinations between teachers and students: By far, in EU Member States the majority of the teaching staff at lower levels of education are women. Their bias towards more “female” teaching methods could be a factor for less early leavers, fewer grade repetition and better reading skills among girls. Such gender bias in teaching can also be regarded as some form of discrimination.

Simple gender prejudices and stereotypes can also be reasons for different outcomes (see Fernández et al. 2001 or Lavy 2004a). For example, direct discriminatory access to some professions and career tracks can lead to disadvantages for women. Moreover, the awareness of later discrimination can result in a socially sub-optimal investment in education among women even before entering the labour market. Typical prejudices affecting educational choices are parental and social prejudices about different study, field of study, and occupational predispositions of boys and women. Very intensively studied are prejudices concerning different study aptitudes of boys and girls to acquire math skills.

Prejudices and expectations of future discrimination at higher stages of education or on the labour market (lower wages or employment options) can affect educational choices leading to different outcomes which might be comparable with differentials due to intentional or unintentional discrimination discussed above. On the other hand, observed differences in outcomes are also driven by non-discriminatory factors and one should be very carefully when making quick conclusions based on few indicators.

In general, research on gender differences shows the difficulty to separate innate from learned behaviours, or to understand to what extent stereotyping influences individuals' perceptions and behavioural or cognitive gender differences. Research shows that, in general, the range of differences is small compared to the similarities existing between the genders.

However, some reasons for gender differences pointed out above are obviously either founded in E&T systems or can be easily attenuated by E&T reforms. Policies that abolish early competitive streaming/tracking or at least try to postpone it to later years can reduce negative selection effects arising from early skill differences and different stress perception in testing between boys and girls. Incentive schemes to attract male teachers at early educational levels are appropriate means to reduce gender specific teaching methods. Yet, prejudices and expectations forming preferences and guiding school choices of gender groups are probably very difficult to detect if they are not obvious and can not be directly tackled by the legal framework. The section on indicators will provide a more concrete monitoring system pointing in detail at the most important elements to be addressed.

## **4.2 Reasons for Inequality due to Immigration**

We have pointed out the different outcomes between natives and migrants/ethnic minorities in terms of school attainment. In most countries natives or people born in the respective country perform better than people born abroad or having any kind of migrant background.

In the US, studies show that lots of the difference in cognitive achievement between whites and blacks is the result of differences in school quality (Fryer and Levitt 2004). The choice of a good school depends on several factors like information of the parents about quality but also simply on regional segregation and access limitations. Often immigrant families lack appropriate information about different schools and/or live in areas forcing them to send their children to lower quality public schools. This often leads to high concentration of weak students in particular schools. Such school quality problems get even worse if school funding depends too much on local community funding – depending on local tax revenues and public schooling funding preferences of the local electorate.

In several Member States of the EU there is not only general variation in school quality. Many countries have an additional streaming/tracking of students. While most educational systems claim that their process of admission to different tracks is based on ability differences between students, this is not always the case. And if so, seemingly existing ability differences between natives and migrant groups at the time of streaming are often not innate but a consequence of different treatments in earlier years.

The observed fact that – conditional on ability - immigrants predominantly enter into lower educational tracks might be a matter of inequity of opportunity and discrimination. Those groups are frequently constrained in access to information about educational options and about true economic and non-pecuniary returns that are related with different tracks (see Jensen 2010 or Hastings and Weinstein 2008). This can lead to a selection into lower tracks of children from this group although their ability would enable them to go the higher ones.

And even if the selection process is not ability blind immigrants can be disadvantaged if current ability differences are not innate but are the consequence of different educational experiences and growing-up before selection takes place. There is a bulk of psychological and economic research, especially around the former Nobel Laureate James Heckman, that shows that large part of ability differences are rather due to differences in early childhood experiences than due to inherited genetic endowment (see Heckman 2006 and Cunha et al. 2007).

It is frequently the case that compared to majority population, parental social background of students from race/ethnic minority groups is weaker. This makes the disadvantages faced by that group very similar to those of natives with low family background. However, one crucial difference is language skills. As far as the above described reasons for inequality of opportunity and discrimination can be attributed to insufficient language skills, this is a migrant-specific issue.

Not surprising, the abolishment of early streaming or at least its postponement to later years would probably improve the situation of immigrant children. Yet, there are also other E&T policies that can be beneficial for this group. Attendance in any kind of early childhood programmes can reduce early ability differences (Leuven et al. 2010; Cunha et al. 2006; Schuetz et al. 2008; Cunha and Heckman 2009), also by enhancing language skills. Often, immigrants/ethnic minorities do not receive any external pre-primary childcare or education and are not compensated for that by adequate parental stimulation. If compulsory early childhood education is hardly enforceable, at least information policies about the importance of attendance could be improved. This is also true at other educational levels and especially at the time when school-to-school transitions take place

There are methods of promoting communication between schools and immigrant families: publication of written information on the school system in the language of origin of immigrant families; the use of interpreters in various situations in the school life; and the appointment of resource persons, such as mediators, to be specifically responsible for liaising between immigrant pupils, their families, and the school (see also section 5).

In general, better school choice can be especially fruitful for immigrant children as it has been proved by several studies in the US (see Hoxby 2003, Hanushek et al. 2005 and West and Peterson 2006). The introduction of vouchers (Nechyba 2000) or the abolishment of school districts that force children to go to specific schools can be successful policies in this area.

To promote more equity, financial incentives for teachers can also be targeted at immigrant students to particularly boost their performance (Lavy 2002, 2009).

#### **4.3 Reasons for Inequality due to Sexual Orientation**

Whether the results we have reported at the end of section 3.3 are consequences of discrimination requires careful interpretation. The fact that gay and lesbians are higher educated than heterosexual individuals speaks, at first glance, completely against any form of discrimination of homosexuals. We must be careful, though, in drawing such conclusion. If it

is the case that anticipated future discriminatory practices at work outweigh the current discriminatory practices at school, it is possible that young gay and lesbian students try to compensate for the assumed losses in earnings and stay in school longer. In addition, there is some empirical evidence that in particular gay students sort into female orientated and low paying fields of studies (Black et al 2007; Plug and Berkhout 2008), which might very well be the consequence of having prejudiced fellow students.

Also the income difference results challenge the predictions of discrimination in which both gay and lesbian workers should earn less than their heterosexual counterparts. Although earnings appear lower for gay men than other men, the observation that lesbian women sometimes earn somewhat more than other women suggests that labour market discrimination is not the most appropriate interpretation. As Black et al (2003) argue, the earnings advantages of lesbian women over other women are not informative about the nature of discrimination against homosexual male and female workers if heterosexual women are discriminated as well. In addition, homophobic attitudes of employers need not be the same for gay and lesbian workers. The low earnings of gay men, relative to other men, might be due to prejudiced employers who discriminate against gay men and much less so against lesbian women.

It is difficult to draw conclusions for policy action in E&T systems from the results on outcome differences between homo- and heterosexual individuals. This is mainly due to the fact that important educational decisions have already been made when gay and lesbian student become fully aware that they are different from other students, educational attainment and field of specialization might remain unaffected by discriminatory practices. Detecting discriminatory practices in school thus requires that some students recognize themselves as gay or lesbian. In general, tackling sexual discrimination goes beyond E&T systems and requires an atmosphere of tolerance not only in schools but in the society as a whole.

#### **4.4 Reasons for Inequality due to Family Background**

Several outcome differences indicated in section 3.4 have similar reasons than those reported for migrants and ethnic minorities in section 3.2 (like different school quality, early ability differences etc.). While we will not repeat listing all these factors in this sub-section, we will have a more detailed discussion on which elements of the intergenerational association really hint at some (un)intended form of discrimination and which causal chains rather refer to some kind of selection and preferences that can hardly be tackled by E&T systems.

There are two main discrimination mechanisms which operate either through social (or family) connections or (the absence of) parental investments in combination with capital market imperfections. When we consider social connections, we assume that better educated parents have wider and higher quality networks. If children born and raised in better educated families take advantage of their parents' networks and are, because of networks and not merits or ability, more likely admitted to high quality child care or hired in better paying jobs, there is clearly discrimination in favor of children with affluent backgrounds.

Considering the standard credit constraint story, we assume that talented children born and raised in poor families lack the financial resources to go, for example, to high-quality child care or to receive private tutoring. If low educated families want to invest in their children's education but cannot borrow the money to finance it, we may talk about discrimination against talented children raised in poor backgrounds.<sup>2</sup>

The mechanisms that run through parenting skills, the genetic transmission of abilities, and the formation of the child's preferences and aspirations might be much more informative about selection and preferences that should not be attributed to discrimination.

That's why the literature on intergenerational transmission often relies on studies with twins and adoptees: Comparing schooling of children from different families whose mothers or fathers are monozygotic twins or looking at the association between adoptive parents and adopted children is much straighter forward. In both cases, one can exclude that outcome differences of children are due to any factors related to innate (immutable) ability of parents. Therefore, the resulting transmission of human capital (mostly measured in correlations between years of schooling) arising from such studies can be probably attributed to one of the two discriminatory channels and not to selection and preferences.

Apparently, it is very hard to define which transmission channels really hint at some form of discrimination and which ones only signal selection and different preferences of parents with different education or income. Blurred boundaries become evident if we look at the categorization from above: As soon as parenting styles and formation of the child's preferences and aspirations are affected by education and not only an element of innate

---

<sup>2</sup> We interpret imperfections in the capital credit market loosely and believe that credit constraints can take many forms, including, for example, restricted access to high quality neighborhoods with high quality schools.

(immutable) ability of parents, these transmission channels also reflect some form of discrimination.

Thus, for policy-makers it is difficult to detect which part of the intergenerational transmission of human capital produces some inequalities that should be tackled and which elements are just unchangeable outcome differences. If discrimination is obvious, remediating policy actions in E&T systems that reduce the influence of the family background resemble to those recommended in section 4.2. Generally speaking, as far as such equalizing policies (like later streaming/tracking or better early childhood education) do not collide with efficiency issues, there is no reason to abstain from them – irrespective of the source of the observed inequalities (see Hanushek and Wößmann 2006 with evidence on that for educational tracking).

## **5. Policy Experiences from Member States**

The previous section tried to figure out which outcome inequalities describe some form of discrimination and which E&T policies can remediate the discriminatory outcomes. As far as possible, this section tries to come up with some country-level evidence on successful actions taken by Member States.

Several EU Member States have changed their policies of tracking during the last decades on national level (see Table A1 for an overview until 2002). Others show regional differences within countries with regard to educational streaming. Instead of providing anecdotic evidence and experience from Member States we exploit the fact that several results of these reforms have already been well documented in economic research.

For Sweden we find that reform policies that abolished tracking after grade 6 of compulsory school increased earnings, especially for those children with low educated fathers. The results base on reforms that have been implemented already 50 years ago (see Meghir and Palme 2005). A new Finish study shows similar results analyzing a tracking reform within the seventies: The abolishment of tracking after grade 4 by replacing it with a nine-year comprehensive school reduces the relation between sons' and fathers' earnings by 20 percent (Pekkarinen et al. 2009). Similarly, a Swiss study also reports an improvement in intergenerational mobility by detracking: Starting tracking at later grades reduces relative differences by parents' education in the probability that the student attends the highest secondary school track (see Bauer and Riphahn 2006, Betts 2011). This result does not stem

from a special reform but uses different tracking regimes in different Swiss cantons. A Dutch study exploits variation across schools in the age of tracking and finds a negative effect of early streaming on the probability of entering postsecondary education (see Van Elk et al. 2009, Betts 2011). Poland implemented school reforms that postponed educational streaming and the decision about entering special vocational tracks at the end of the 1990s. A recent analysis shows that Poland's increase in PISA scores can partly be attributed to these policies (see Jakubowski et al. 2010).

In order to analyze gender policies and measures targeted at immigrants and other minority groups we can not easily refer to specific studies. However, there is some interesting work across Member States provided by Eurydice. Their overview presents some descriptive comparisons across countries on several important indicators (see Eurydice 2009a and 2009b).

With regard to gender issues, Eurydice reports a general overview to what extent gender equity plays a major role in legislative frameworks. The report defines three different categories of considering gender equality: *general equal treatment and equal opportunities*, *equal treatment and equal opportunities in education* and *active promotion of gender equality in education*. While the first definition just indicates that gender equity is a general goal in Member States' anti-discrimination legislation but does not directly refer to the education sector, the second one becomes more concrete in terms of identifying specific sub-topics in education in which gender equity matters most. In the third category of tackling gender equity in legislative frameworks equity is actively promoted and defined as a crucial outcome of educational systems. Figure 1 of the appendix provides an overview to which categories Member States can be assigned. However, this is just a very rough measure and does not really indicate to what extent specific gender policies have been implemented.

More concrete interventions refer to tackling gender equality using guidelines in the curriculum, challenging traditional gender career choices and considering gender issues in school books and teaching materials.

We have mentioned that gender-specific teaching could affect outcomes of students. Certain gender stereotypes can lead to contents that attract boys and girls differently and thus lead to different achievement (Paechter 1998). Five countries especially mention gender equality as a principle in the curriculums (Malta, Austria, Finland, Sweden, Lichtenstein and Norway). Gender issues in the curriculum form also part in other countries, but more with respect to

cross-curricular themes (citizenship education, ethics or languages) or as specific topic in certain subjects (Spain, France).

Eurydice summarizes that gender aspects are part of curriculums in many countries; yet, only a third of Member States really has implemented some sort of gender-sensitive teaching that includes guidelines for schools and teachers (see Eurydice 2010, p. 57-59).

Policies impeding that gender-specific stereotypes dominate career choice of young men and women exist in a lot of EU Member States. Gender-Specific vocational guidance is a tool implemented in many countries (see Figure A2 of the appendix), however mostly targeted to girls and not really embedded in national strategies to tackle gender stereotypes (see Eurydice, p. 64).

Apart from the curriculum as a whole, gender stereotypes can also be triggered by school books and teaching materials. Only few Member States evaluate these school inputs in terms of their gender compatibility (see Figure A3 of the appendix), let alone have institutionalized any monitoring system that reduces gender stereotypes in textbooks and other teaching material.

We attributed a possible further source of gender inequality to a feminisation of the teacher profession, especially in lower grades. Such pattern is predominant across almost all Member States but only few countries really consider this as a danger to gender equality at a political level (Belgium (French Community), Germany, Denmark, Lithuania, Finland and the United Kingdom (Scotland)). Several countries, however, have initiated targeted programmes in order to win over men for the teaching profession. Special initiatives exist in Ireland and in the Netherlands, but also other countries started specific programmes (the Czech Republic, United Kingdom, Sweden, and Norway). While there does not seem to exist any evidence on these very new initiatives so far, some first hints show that higher payment will probably not be the only factor attracting more male teachers (see Eurydice 2010, pp. 91-93).

Other gender-specific EU comparisons of Eurydice focus on single sex schools and on an increased female school management were experience of Member States are even scarcer and will not be reported in this work.

Comparable measures on policies targeted at migrants and/or minority groups also partly stem from Eurydice. This review just mentions some few aspects that arise with equity issues in terms of integrating immigrants/and or people from minority groups. Yet, we want to report it here because the analysed policies have probably not often been in the focus of research, the data on them are quite new and cover a lot of EU Member States.

We have already argued that inequalities specifically faced by immigrant children are often due to language difficulties. Among others, this shortcoming especially affects the extent to which parents are able support the educational pathway of their children. Parental backing of children becomes more difficult if families do not receive or can not handle school information as efficiently as natives. As far as this refers to insufficient language skills, immigrant families depend on receiving information in their language of origin. Eurydice uses three indicators to show how EU Member States have tackled this problem: *publication of written information on the school system in the language of origin of immigrant families*, *the use of interpreters in various situations in the school life* and *the appointment of resource persons, such as mediators, to be specifically responsible for liaising between immigrant pupils, their families, and the school*.

Most countries provide any information on the school system in the mother tongue of immigrant families. However, the level on which such information is published differs a lot. In some countries only ministries at national level come up with documents in different languages; others, however, provide information on much lower levels with a broader range of languages and better focused on the needs of the families like in Finland or the Netherlands (see Figure A4 in the appendix and Eurydice 2009, p. 10).

A further helpful tool can be the use of interpreters. There are considerable differences between countries on use and relevance of them. In some Member States it is just a central recommendation to use them, in others it is a statutory right of immigrants to be assisted by an interpreter (see Figure A4 in the appendix). Member States also differ in the way financial costs for such services are organized (see Eurydice 2009 pp. 11-17).

A measure introduced in several countries is the use of resource persons, such as mediators, to be specifically responsible for liaising between immigrant pupils, their families, and the school. Organisation can be on regional or even school level.

Heritage Language Teaching has proved to be a further important component to equalize differences between immigrant and natives. Mother tongue tuition promotes self-esteem of immigrant children and fosters also learning the language of instruction. Most EU countries still have only general regulations on national level with regard to this topic (see Eurydice, pp. 19).

Several concrete country initiatives with regard to the indicators from above have been discussed by Eurydice. It would go beyond the scope of such report to mention them in detail and we refer to the very comprehensive overview by Eurydice (2009 and 2010) in order to get concrete information on single programmes.

This was just a small extract of Member States' actions in order to tackle inequalities in terms of the dimensions we discussed in section 4. We have seen that policies that have postponed or abolished tracking during the last decades succeeded in foster equality in several Member States. Further, different other measures have been taken in order to improve gender equity and equity between natives and immigrants. So far, we only have information on the different initiatives and on the extent to which countries have been involved, but we still lack information about their impact on educational outcomes. In future, it would be desirable to have some smooth evaluations of these quite new initiatives to be able to judge their effectiveness.

## 6. Recommended Indicators, Benchmarks and Data Availability

The 2009 progress report on the Lisbon objectives lists a series of indicators and benchmarks for monitoring the performance of E&T systems (Table 7).

**Table 7: European Education Indicators and Benchmarks**

<b>Indicator</b>	<b>EU benchmark by 2020</b>
Participation in early childhood education	At least 95% of children between 4 years old and the age for starting compulsory primary education
Early leaving from E&T	The share of early leavers from E&T should be less than 10%.
Proficiency in key competences such as reading, mathematics and science, language and ICT skills	The percentage of low-achieving 15-Year-olds in reading literacy should have decreased by at least 20% compared with 2000.  The percentage of low-achieving 15-year-olds in reading, mathematics and science literacy should be less than 15%.
Inclusion of students with special educational needs in mainstream schools	
Participation in adult learning	

Source: European Commission 2009b.

In order to address the issue of equity and social inclusion EENEE recommends fine tuning and enlarging the above indicators as shown in Table 8. The rationale for choosing these indicators is explained below.

**Table 8: A Recommended Indicators Shortlist**

<b>Domain</b>	<b>Indicator</b>
Preschool	Public preschool coverage (among disadvantaged)
	Public child care facilities
School	Percentage of male staff
	School choice availability (Vouchers, public funding of private schools)
	Percentage of male staff in early grades
	Financial aid for low income families
	Age of tracking/streaming/academic selection
	Cognitive achievement
Tertiary	Early school leavers
	Tertiary education accessibility
	Student loans availability
Overall	Percentage of female students in the field of math and science
	Incidence of public education expenditure
	Organization of mother tongue tuition
	Communication between immigrant families and schools
	Gender-balanced curriculums
	Gender-balanced career guidance

As a matter of principle one cannot have too many indicators and should focus on the most important ones. Second, indicators should be concrete measurable (Atkinson et al. 2002). Our

literature review presented in this paper overwhelmingly points at “the earlier the better”. Thus, the indicators at primary level preschool are of utmost importance.

Preschool attendance is the most relevant indicator at the pre-primary level. We should primarily focus on attendance of children with low socioeconomic background as those benefit most from early childhood education programmes or center-based care. At the same time we know that preschool attendance among this group of children is very low compared to better-off children. As attendance also depends on the supply of places in early childhood programmes and/or center-based care, public child care facilities is another important indicator at this level. Of course, pure supply of child care facilities and high attendance rates are not at all sufficient. In order to fully benefit from the promising effects of pre-primary education, additional (quality) indicators at the pre-primary level such as staff qualification, curricula, staff-child-ratios and so on might be considered as well.

Moving up the education ladder, a key indicator is the availability of choice regarding the school to be attended. As outlined, extensive research in the United States has shown that when families are given the choice to attend a better school, may it be private or of the charter type, disadvantaged children benefit most (West and Peterson, 2006). Indicators that show the availability of educational vouchers or the share of public funding of private schools could be helpful.

Given the adverse effects of tracking and early selection documented in the literature, different indicators on the stratification of school systems should be monitored.

Since selectivity of educational schemes creates fertile grounds for various forms of discrimination and unintended differentials in treatments, it is desirable to make available internationally comparable indicators describing in greater detail selectivity of schooling systems. Such indicators could be of different nature and can be constructed in different way requiring different sources of information, e.g.: ages of selection (streaming) throughout the educational system, the degree of competitive educational tracking, characteristics of the mechanism assigning pupils into educational streams (based other criteria than ability like commuting distance, physical handicaps, siblings already in the school).

As an education quality indicator, cognitive achievement in core subjects should be monitored, disaggregated by socioeconomic background, migrant status and gender. According to the latest PISA scores, in ten EU countries 25% of students do not exceed the

lowest level of reading proficiency defined by the OECD (Eurostat 2010, Figure 4.10). In terms of PISA-points<sup>3</sup> that means that they do not achieve more than 335 points.

The percentage of early school leavers (and in particular the percentage of early school leavers from initial VET because this number is much higher in most member states than the overall percentage number of early school leavers) is also a critical indicator of equity and social inclusion, as it is mostly students from adverse socioeconomic and/or migrant background that will be part of this statistic (EENEE 2007). Therefore, it serves as kind of core indicator that implicitly subsumes all inequities that might have occurred during early childhood and lower school grades.

The passage to tertiary education is also critical. Conditional on same ability, no target group student should be excluded from entry because of financial constraints. The provision of public student loan schemes is an indicator in this respect.

In case of the tertiary level of education, indicators should describe the burden of private direct costs of education (tuition), the scope of student loan provision and the uniformity of conditions with respect to gender and ethnic groups. Indicators like relative enrolment of students from minority groups and the degree of gender concentration in broader fields of tertiary education could be useful.

We also recommend some indicators that are valid and important at all levels of education. One should monitor how public expenditure on education is distributed across families with different socioeconomic background. Such indicator would reveal who really pays and who benefits from public expenditure on education. Extensive research starting from Hansen and Weisbrod's (1969) classic study in the United States has shown that rich families and their children benefit the most from public expenditure on higher education. This research has been replicated in many countries with the same overall conclusion (Vawda 2003). Having an indicator in this respect may facilitate the reallocation of public expenditure on education towards lower income families.

Furthermore, the share of male teachers both at pre-primary level but also in lower school grades is a valid indicator to monitor the gender balance of teaching.

---

<sup>3</sup> PISA has an international mean of 500 points and a standard deviation of 100.

Although not fully meeting the criterion of easily measurable, the organization of mother tongue tuition and communication of school information towards immigrants are decisive factors that should be added to that list. The same is true for indicators on gender-balanced curriculums and/or gender specific career guidance (see section 5 on Eurydice's reports on those issues). For these areas, the development of new data is especially important because useful information is rarely available at the moment

Last, we want to mention that the Gini-Coefficient, probably the most prominent measure of income inequality, can serve as an additional indicator. While not directly referring to the E&T system (and therefore not element of the above list), its correlation with educational measures makes it an attractive parameter on macro-level that corroborates the importance of E&T for societal equality as a whole (see Table 9).

**Table 9: Educational Attainment of the Population and Income Inequality**

Country	Population 25 to 64 having completed at least upper secondary education (%)	Gini coefficient
Czech R.	90.9	0.25
Slovak R.	89.9	0.26
Estonia	88.5	0.32
Poland	87.1	0.31
Latvia	85.8	0.34
Germany	85.3	0.28
Sweden	85.0	0.25
Slovenia	82.0	0.28
Finland	81.1	0.25
Austria	81.0	0.28
Hungary	79.7	0.24
Denmark	77.6	0.25
Bulgaria	77.5	0.28
Romania	75.3	0.28
UK	73.4	0.34
Netherlands	73.3	0.29
Ireland	70.0	0.31
Belgium	69.6	0.26
France	69.6	0.31
Luxembourg	67.9	0.29
Greece	61.1	0.36
Italy	53.3	0.31
Spain	51.0	0.35
Portugal	28.2	0.39

Source: Educational attainment from Eurostat on-line, extracted July 7, 2010. Gini coefficient from World Bank (2005), Table A.2. The higher the Gini coefficient the larger is income inequality.

## **Benchmarking:**

As usual, EENEE abstains from recommending absolute numerical targets to be achieved by Member States by a target year. One reason is that many countries will be far behind in achieving set targets (as it happened in the case of the 2010 Lisbon benchmarks), while others already fulfilled benchmarks. Another reason is that low performing countries might be making a lot on a given indicator, although still being below the target benchmark.

EENEE recommends the adoption of within-country change of a given indicator over the value of the indicator in the previous year, monitored annually. In other words, the yardstick is not set by what other countries are doing, but how well, or not so well, a country is performing in improving an indicator relative to its own starting position.

Of course country listings of how other countries are doing on a given indicator could be used as a red flag regarding underperformers and to call attention in the policy debate, but not for setting targets to specific Member States that might never be reached.

## **Data Availability:**

With the exception of some indicators mentioned in the category *overall domain* of Table 8, all other indicators could be extracted by special tabulations of existing and coming surveys and their ad hoc modules:

- ECHP, European Community Household Panel
- HBS, Household Budget Survey
- EU-SILC, EU Statistics on Income and Living Conditions
- ESSPROS, European System of integrated Social Protection Statistics
- PISA, Program for International Student Assessment
- TIMMS, Trends in International Mathematics and Science Study
- PIAAC, Programme for the International Assessment of Adult Competencies
- PIRLS, Progress in International Reading Literacy Study

The report has shown that it is difficult to empirically separate discrimination from selection effects. As proved by the studies using information on twins and adoptees (see section 4.4), empirical strategies to disentangle selection from causation put strong requirements on data. It is of utmost importance to have extensive micro data on individuals instead of semi-aggregated data structures.

In Scandinavian countries these quality requirements are particularly met because of the availability of register data. Such data facilitate to merge individual administrative information across several dimensions (social security, education, health, employment etc.) and individuals (parents, siblings etc.). Furthermore, the extensive number of observations in such data sets eases the analysis of many questions.

Most other countries are tremendously lagging behind. If register data became more widely available throughout Europe, there would be more and better evidence, especially on intergenerational effects.

## **7. Conclusions**

The goal of this report was to give a fresh look on the dimension of social cohesion and equity in European E&T systems. While EENEE has worked on different aspects of this topic in previous reports, this work tried to strengthen the analysis by distinguishing different concepts of equity and applying them on the most important topics in which inequalities in terms of educational outcomes can be observed.

We started with an overview on different concepts that appear in the literature in the context of social cohesion and equity. For our purpose, it was essential to develop a framework that helps to decide which outcome differences really matter for equity reasons and which ones are just result of different preferences and/or unchangeable factors that can not be affected by E&T systems. Such analysis could serve as kind of decision guidance to categorize outcomes differences according to their discriminatory nature.

After having identified four major fields in which outcomes differences occur (Gender Inequality, Inequality due to Immigration, Racial or Ethnic Differences, Inequality between Individuals with different Sexual Orientation and Inequality due to Family Background), we tried to find reasons for the inequalities and classify them in relation to the equity criteria previously elaborated. Several differences have been revealed as obviously discriminatory; in other cases boundaries between discrimination and differences induced by preferences and/or

unchangeable factors were quite blurred. We realized that some discriminatory differences are the direct result of specific elements of E&T systems on different levels; others, in turn, come from outside but can be affected and attenuated by targeted interventions in E&T systems.

Section 5 presented some experiences from Member States on interventions that aimed at improving equity in different fields. Policies in several countries show the equalizing effect of more comprehensive school systems. While this is not a new result, additional gender- and immigrant-related initiatives that have been emerged in many Member States are more interesting. Future evaluation can hopefully prove their positive impact.

One core task of EENEE is the provision of indicators and benchmarks to ensure a smooth monitoring of different E&T dimensions by the European Commission. In terms of equity and social cohesion we recommended a bulk of decisive indicators over all levels of E&T systems that can help to get an insight in Member States' success in this field. As always, EENEE remains pretty reluctant with the recommendation of benchmarks to be achieved by Member States with regard to specific indicators. We still think that across-country benchmarks often blur the efforts of some Member States in tackling equity issues. Criteria that consider single countries' improvements over time are therefore preferable.

In general, it should be understood that simple indicators as currently used and discussed above have their limits. They can point at but not prove the existence of such complex phenomena as social exclusion or discrimination in education, even if consensus is reached on what these terms mean. Indicators can provide a clue to possible problems, but say little about causal relationships between policies and educational outcomes. Unscrupulous use of simple correlations between indicators and policies may lead to wrong conclusions. Indicators should be considered as a very basic element of evaluation, but by far not sufficient.

In the end, EENEE hopes that this report extends the Commission's knowledge base in terms of social cohesion and equity in E&T systems and encourages decision-makers to induce the crucial policy initiatives in this important area.

## References

- Allegretto S., Arthur M. (2001): An empirical analysis of homosexual/heterosexual male earnings differentials: Unmarried or unequal? *Industrial and Labor Relations Review* 54: 631–646.
- Arabsheibani G., Marin, A., Wadsworth J. (2005): Gay pay in the UK. *Economica* 72: 333–347.
- Atkinson, A. (1970): On the measurement of inequality. *Journal of Economic Theory* 2: 244–263.
- Badgett Lee, M.V. (1995): The wage effects of sexual orientation discrimination. *Industrial and Labor Relations Review* 48 (4): 726–739.
- Bauer, P., Riphahn, R.T. (2006): Timing of school tracking as a determinant of intergenerational transmission of education. *Economics Letters* 91 (1): 90–97.
- Behrman, J. R., Hrubec, S., Taubman, T. and Wales, T. J. (1980): *Socioeconomics Success: A Study of the Effects of Genetic Endowment, Family Environment, and Schooling*. Amsterdam: North-Holland.
- Betts, J. (2011): The Economics of Tracking in Education. In: Eric A. Hanushek, Stephen Machin, Ludger Woessmann (eds.), *Handbook of the Economics of Education*, Vol.3: 341–381. Amsterdam: North-Holland, forthcoming.
- Black D., Makar H., Sanders S., Taylor L. (2003): The earnings effects of sexual orientation. *Industrial and Labor Relations Review* 56 (3): 449–469.
- Black D., Sanders S., Taylor L. (2007): The economics of lesbian and gay families. *Journal of Economic Perspectives* 21 (2): 53–70.
- Black, S. E., Devereux, P.J. (2010): Recent Developments in Intergenerational Mobility. NBER Working Paper 15889.
- Blandford J. (2003): The nexus of sexual orientation and gender in the determination of earnings. *Industrial and Labor Relations Review* 56 (4): 622–642
- Bors, D. A., Vigneau, F., Kronlund, A. (2006): Anxiety Facing Exams: Dimensionality, Similitudes and Differences in University Students. *Canadian Journal of Behavioral Science* 38 (2): 176 - 184.
- Brunello and Checchi (2007): Does school tracking affect equality of opportunity? New international evidence. *Economic Policy* 22 (October): 781–861.
- Cunha, F., Heckman, J. J., Lochner, L., Masterov, D.V. (2006): Interpreting the Evidence on Life Cycle Skill Formation. In: Eric A. Hanushek, Finis Welch (eds.), *Handbook of the Economics of Education*, Vol. 1: 697–812. Amsterdam: North-Holland.

- Cunha, F., Heckman, J. J. (2007): The Technology of Skill Formation. *American Economic Review* 97 (2): 31–47.
- Cunha, F., Heckman, J.J. (2009): “Human capital formation in childhood and adolescence. CESifo DICE Report 4/2009.
- EENEE (2006): Efficiency and Equity in European Education and Training Systems. Analytical Report, EENEE.
- EENEE (2007): The Costs of School Failure: A Feasibility Study. Analytical Report, EENEE.
- EENEE (2008): Education and Training Systems: Key Challenges and Their Implications. Analytical Report, EENEE.
- EENEE (2009a): Skills for Employability, Economic Growth and Innovation: Monitoring the Relevance of Education and Training Systems. Analytical Report, EENEE.
- EENEE (2009b): Methods for Causal Evaluation of Education Policies and Practices: An Econometric Toolbox. Analytical Report, EENEE.
- Educational Policy Institute (2005): Global Higher Education Rankings: Affordability and Accessibility in Comparative Perspective. Arlington, VA ([www.educationalpolicy.org](http://www.educationalpolicy.org))
- European Commission (2009a): Council Conclusions on a strategic framework for European cooperation in education and training, ET 2020.
- European Commission (2009b): Progress towards the Lisbon objectives in education and training.
- European Council (2010): Conclusions, European Council, 17 June 2010 EUCO 13/10.
- Eurostat (2009): Labour Market Statistics. Eurostat.
- Eurostat (2010) : Combating poverty and social exclusion - A statistical portrait of the European Union 2010. Eurostat.
- Eurostudent (2005): <http://www.his.de/Eurostudent/report2005.pdf>
- Eurydice (2009): Integrating Immigrant Children into Schools in Europe. Brussels, European Commission.
- Eurydice (2010): Gender Differences in Educational Outcomes. Study on the Measures Taken and the Current Situation in Europe. Brussels, European Commission.
- Fryer, R.G., Levitt, S.D. (2004): Understanding the Black-White Test Score Gap in the First Two Years of School. *The Review of Economics and Statistics* 86(2): 447-464.
- Fryer, R.G. (2010): Racial Inequality in the 21<sup>st</sup> Century: The declining Significance of Discrimination. NBER Working Paper 16256.

- Hansen, W. Lee, and Weisbrod, B. (1969): The Distribution of the Costs and Benefits of Public Higher Education: The Case of California. *Journal of Human Resources* 4 (2): 171-91.
- Hanushek, E. A., Kain, J. F., Rivkin, S.G., Branch, G. F. (2005): School Quality and Parental Decision Making with School Choice. *Journal of Public Economics* 91 (5-6): 823-848.
- Hanushek, E. A., Wößmann, L. (2006): Does Early Tracking Affect Educational Inequality and Performance? Differences-in-Differences Evidence across Countries. *Economic Journal* 116 (510): C63-C76.
- Hastings, Justine S., Weinstein, Jeffrey M. (2008): Information, School Choice and Academic Achievement: Evidence from two Experiments. *Quarterly Journal of Economics* 123 (4): 1373-1414.
- Haveman, R., Wolfe, B. (1995): The Determinants of Children's Attainments: A Review of Methods and Findings. *Journal of Economic Literature* 33 (4): 1829-1878.
- Heckman, J. J. (2006): Skill Formation and the Economics of Investing in Disadvantaged Children. *Science* 312 (5782): 1900-1902.
- Hertz, T., Jayasundera, T., Piraino, P., Selcuk, S., Smith, N., Verashchagina, A.(2007): The inheritance of educational inequality: International comparisons and fifty-year trends. *The B.E. Journal of Economic Analysis & Policy* 7, Article 10.
- Hoxby, C. M. (2003): School Choice and School Competition: Evidence from the United States. *Swedish Economic Policy Review* 10 (3): 9-65.
- Ichino, A., Winter-Ebmer, R. (1999): Lower and upper bounds of returns to schooling: An exercise in IV estimation with different instruments. *European Economic Review* 43 (4-6): 889-901.
- Jakubowski, M., Patrinos, H. A., Porta, E. E., Wiśniewski, J. (2010): The Impact of the 1999 Education Reform in Poland. World Bank Policy Research Working Paper 5263.
- Jensen, Robert (2010): The (perceived) Returns to Education and Demands for Schooling. *Quarterly Journal of Economics* 125 (2): 515-548.
- Jurajda, S., Münich, D. (2008): Gender Gap in Admission Performance under Competitive Pressure. CERGE-EI Working Paper Series, WP 371.
- Lavy, V. (2002): Evaluating the Effect of Teachers' Group Performance Incentives on Pupil Achievement. *Journal of Political Economy* 110 (6): 1286-1317.
- Lavy, V. (2004a): Do Gender Stereotypes Reduce Girls' Human Capital Outcomes? Evidence from a Natural Experiment. Hebrew University of Jerusalem, mimeo.
- Lavy, V. (2009): Performance Pay and Teachers' Effort, Productivity and Grading Ethics. *American Economic Review* 99 (5): 1979-2011.

- Leuven, E., Lindahl, M., Oosterbeek, H., Webbink, D. (2010): Expanding schooling opportunities for 4-year-olds . *Economics of Education Review* 29 (3): 319-328.
- Machin, Stephen (2006): Social Disadvantage and Education Experiences. OECD Social, Employment and Migration Working Papers no. 32, OECD
- Machin, S., Pekkarinen, T. (2008): Global Sex Differences in Test Score Variability. *Science* 322 (November): 1331–1332.
- Meghir, C., Palme, M.(2005): Educational reform, ability, and family background. *American Economic Review* 95 (1): 414–424.
- Mora, J-G. (1999): Socioeconomic background, schooling, and monetary rewards in Spain. University of Valencia, mimeo.
- Nechyba, T. J., (2000): Mobility, Targeting, and Private-School Vouchers. *American Economic Review* 90 (1): 130-146.
- NESSE (2008a): Education and migration. NESSE.
- NESSE (2008b): Early childhood education and care. NESSE.
- NESSE (2009): Gender and education. NESSE.
- OECD (2001): Knowledge and skills for life – First results from the OECD programmes for international student assessment 2000 (PISA). Paris, OECD.
- OECD (2009): Education at a Glance 2009. Paris, OECD.
- OECD (2010): Education at a Glance 2010. Paris, OECD.
- OECD (2010): The High Cost of Low Educational Performance. Paris, OECD.
- Paechter, C. (1998): Educating the other: Gender, power and schooling. London: Falmer Press.
- Papanicolaou, J., Psacharopoulos, G. (1979): Socioeconomic background, schooling and monetary rewards in the United Kingdom. *Economica* 46: 435-439.
- Patrinos, H. (1995): Socioeconomic background, schooling, experience, ability and monetary rewards in Greece. *Economics of Education Review* 14 (1): 85-91.
- Pekkarinen, T., Uusitalo, R., Pekkala, S. (2006): Education Policy and Intergenerational Income Mobility: Evidence from the Finnish Comprehensive School Reform. IZA Discussion Paper 2204.
- Peterson, P. E., Howell, W., Wolf, P. J., Campbell, D. (2003): Vouchers: Results from Randomized Experiments. In: Caroline M. Hoxby (ed.), *The Economics of School Choice*: 107-144. University of Chicago Press.
- Peterson, P. E., Wößmann, L. (eds.) (2006): *Schools and the Equal Opportunity*

Problem. Cambridge, MA: MIT Press.

Peterson, P. E., Wößmann, L. (2007): Introduction: Schools and the equal opportunity problems. In: Paul E. Peterson, Ludger Wößmann (eds.), *Schools and the Equal Opportunity Problem*. Cambridge, MA: MIT Press.

Plug E., Berkhout, P. (2004): Effects of sexual preferences on earnings in the Netherlands. *Journal of Population Economics* 17 (1): 117–131.

Roemer, J. E. (1998): *Equality of Opportunity*. Cambridge, MA: Harvard University Press.

Schütz, G., Ursprung, H. W., Wößmann, L. (2008): Education Policy and Equality of Opportunity. *Kyklos* 61 (2): 279-308.

Schultz, T. W. (ed.) (1972): Investment in education: The equity-efficiency quandary *Journal of Political Economy* 80 (3) Part II.

Sen, A. K. (1985): *Commodities and Capabilities*. Oxford: Elsevier Science Publishers.

Sen A. K. (2000): Social exclusion: Concept, application and scrutiny. *Social Development Papers* No. 1. Asian Development Bank, Manila.

Vawda, A. (2003): Who benefits from public expenditures. *Economic Affairs*. Institute of Economic and Social Affairs: 40-43.

Van Elk, R., van der Steeg, M., Webbink, D. (2009): The effect of early tracking on participation in higher education. Centraal Planbureau, The Hague CPB Document No. 182.

Weichselbaumer D. (2003): Sexual Orientation Discrimination in Hiring. *Labour Economics* 10 (6): 629-642.

West, M. R., Peterson, P. E. (2006): The Efficacy of Choice Threats within School Accountability Systems: Results from Legislatively-Induced Experiments. *Economic Journal* 116 (510): C46-C62.

Woessmann, L. (2008): How Equal Are Educational Opportunities? Family Background and Student Achievement in Europe and the United States. *Zeitschrift für Betriebswirtschaft* 78 (1): 45-70.

World Bank (2005): *Equity and Development*. World Development Report 2006.

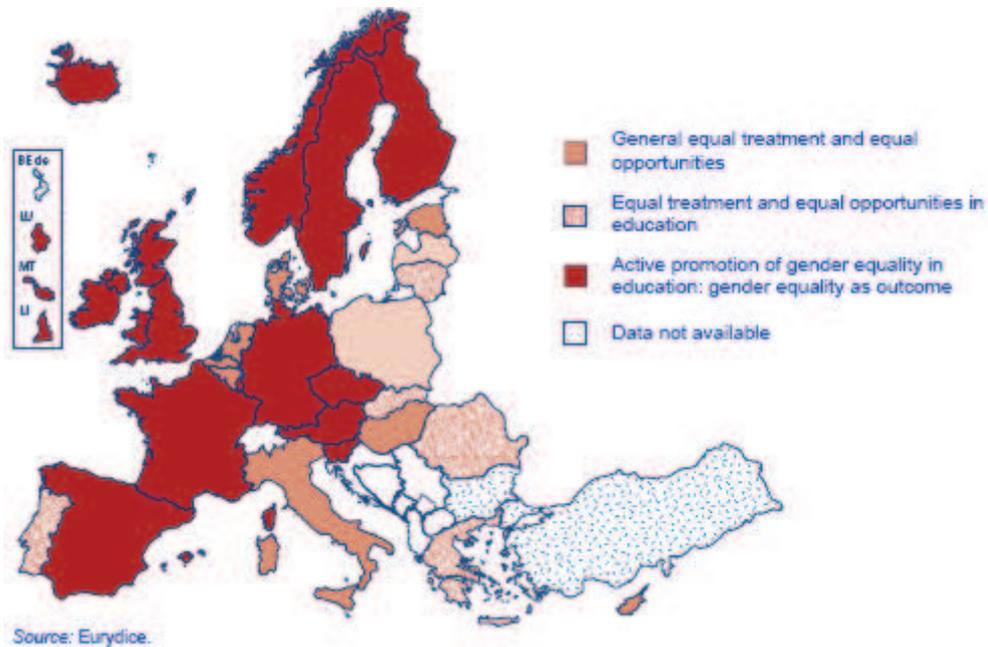
## Appendix:

**Table A1: School Design Across Countries**

Country	Age of first selection into tracks mid 80s	Age of first selection into tracks mid 90s	Age of first selection into tracks 2002	Percentage primary + secondary education in tracking mid 80s	Percentage primary + secondary education in tracking mid 90s	Percentage primary + secondary education in tracking 2002
Austria	10	10	10	0.680	0.680	0.667
Belgium	12	12	12	0.500	0.500	0.500
Bulgaria	14	14	14	0.417	0.417	0.364
Czech Republic	15	11	11	0.250	0.615	0.615
Denmark	16	16	16	0.280	0.280	0.250
Finland	16	16	16	0.250	0.250	0.250
France	16	15	15	0.167	0.250	0.250
Germany	10	10	10	0.692	0.692	0.692
Greece	14.5	14.5	15	0.280	0.280	0.250
Hungary	10	10	11	0.667	0.667	0.667
Ireland	12	12	15	0.478	0.478	0.182
Italy	14	14	14	0.385	0.385	0.385
Latvia	16	16	16	0.182	0.250	0.250
Luxembourg	12	12	13	0.538	0.538	0.462
Netherlands	12	13	13	0.440	0.360	0.500
Norway	16	16	16	0.250	0.231	0.167
Poland	15	15	15	0.360	0.360	0.385
Portugal	15	15	15	0.250	0.250	0.250
Slovakia	10	10	11	0.667	0.692	0.615
Slovenia	15	15	15	0.333	0.308	0.333
Spain	14	16	16	0.360	0.167	0.167
Sweden	16	16	16	0.250	0.250	0.250
Switzerland	15.5	15.5	15	0.296	0.296	0.273
Turkey	12	12	11	0.500	0.500	0.545
United Kingdom	16	16	16	0.154	0.154	0.154

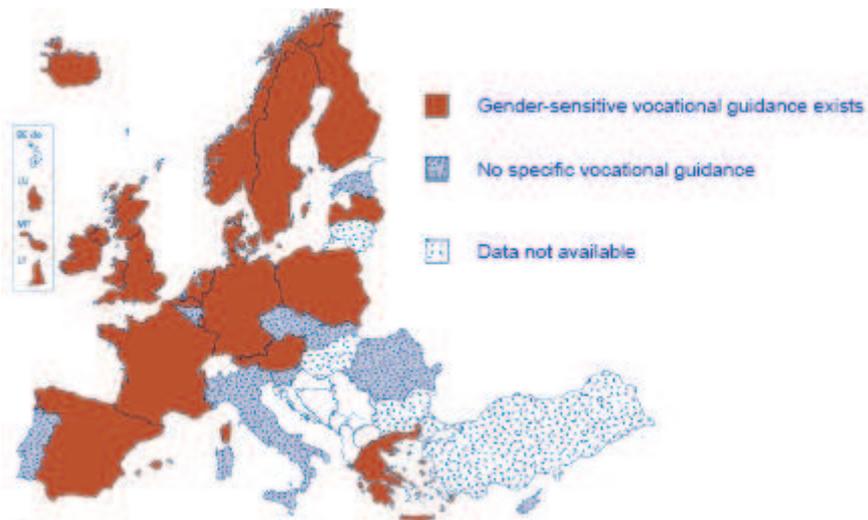
Source: From Brunello and Checchi (2007), Table 1, p. 799.

**Figure A1: Types of Legislative Frameworks for Gender Equality in Education**



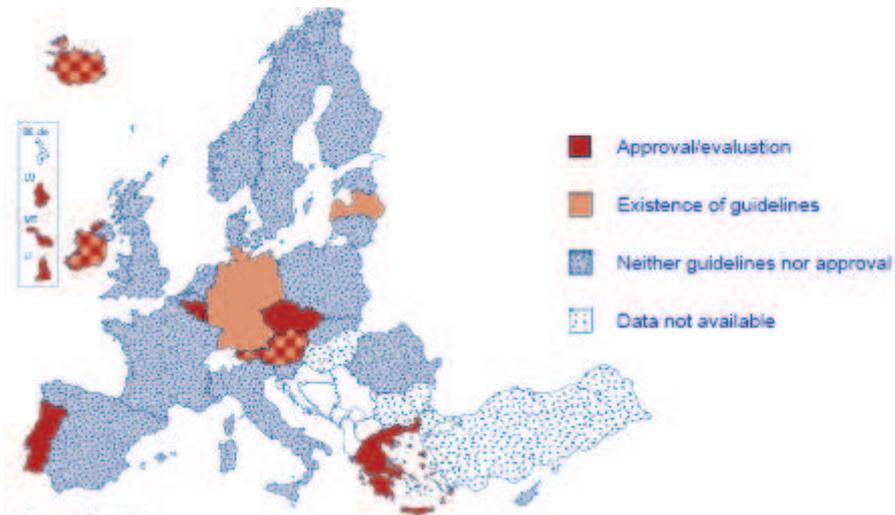
Source: Eurydice (2010), p. 49.

**Figure A2: Specific Vocational Guidance to challenge traditional Career Choices**



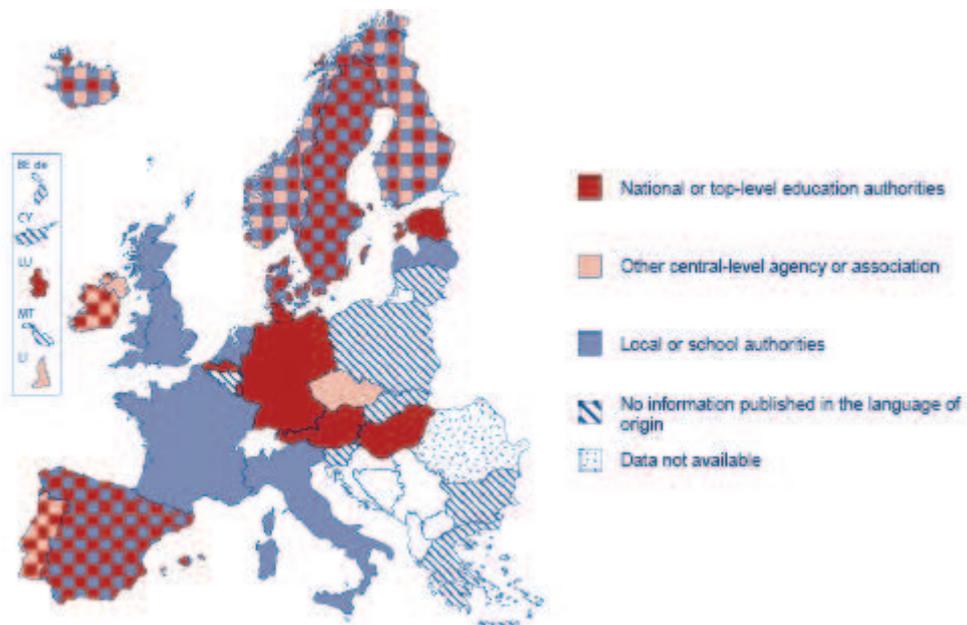
Source: Eurydice (2010), p. 62.

**Figure A3: Guidelines on Gender Issues for Authors of Educational Texts**



Source: Eurydice (2010), p. 65.

**Figure A4: Level of Publication of written Information on School System in the Language of Origin**



Source: Eurydice (2009), p. 9.

## **EENEE Analytical Reports**

- |    |                                                                         |                                                                                                                      |
|----|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 12 | Daniel Münich<br>Erik Plug<br>George Psacharopoulos<br>Martin Schlotter | Equity in and through Education and Training: Indicators and Priorities                                              |
| 11 | Adrien Bouguen<br>Marc Gurgand                                          | Randomized Controlled Experiments in Education                                                                       |
| 10 | Torberg Falch<br>Hessel Oosterbeek                                      | Financing lifelong learning: Funding mechanisms in education and training                                            |
| 9  | Reinhilde Veugelers                                                     | A Policy Agenda for Improving Access to Higher Education in the EU                                                   |
| 8  | Giorgio Brunello<br>Martin Schlotter                                    | Non Cognitive Skills and Personality Traits: Labour Market Relevance and their Development in E&T Systems            |
| 7  | Eric A. Hanushek<br>Ludger Woessmann                                    | The Cost of Low Educational Achievement in the European Union                                                        |
| 6  | George Psacharopoulos<br>Martin Schlotter                               | Skills for Employability, Economic Growth and Innovation: Monitoring the Relevance of Education and Training Systems |
| 5  | Martin Schlotter<br>Guido Schwerdt<br>Ludger Woessmann                  | Methods for Causal Evaluation of Education Policies and Practices: An Econometric Toolbox                            |
| 4  | Martin Schlotter                                                        | Origins and Consequences of Changes in Labour Market Skill Needs                                                     |
| 3  | Martin Schlotter<br>Guido Schwerdt<br>Ludger Woessmann                  | The Future of European Education and Training Systems: Key Challenges and their Implications                         |
| 2  | George Psacharopoulos                                                   | The Costs of School Failure – A Feasibility Study                                                                    |
| 1  | Ludger Woessmann<br>Gabriela Schuetz                                    | Efficiency and Equity in European Education and Training Systems                                                     |