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Abstract¹

This paper is an attempt to propose how education systems can be studied in relation to the welfare state and knowledge society in the global age. It begins by discussing the aims of education and relates these to the core values of social citizenship, arguing that access to the provision of education is a fundamental pillar of citizenship with the purpose of extending and enhancing life chances by general principles of social inclusion and equality of opportunity. It further on reviews a large body of comparative research which studies how the design of education institutions in various countries influences one important aspect of these aims, namely school-leavers' entrance into the labour market. The third and last section investigates the possibilities and difficulties inherent in comparative studies of national systems of education, particularly with regard to questions concerning validity when constructing conceptual models and comparable indicators. The tentative conclusion of the paper is that further comparative endeavours should set out analyzing primarily input- and process-related features of compulsory education, and the dimensions of stratification and standardization of upper secondary education for an assessment of these institutions' capacity to equip citizens with knowledge and skills for human flourishing.

Sammanfattning

Denna rapport syftar till att föreslå hur utbildningssystem kan studeras i relation till välfärdsstaten och kunskapssamhället i den globala tidsåldern. Den inleder med en vid diskussion om utbildningens mål och syften och ansluter dessa till de grundläggande värdena uttryckta i idén om det sociala medborgarskapet. Tillgången till utbildning är en grundläggande medborgerlig rättighet som strävar mot utvidgningen och förbättringen av människors levnadschanser enligt rättvisepprinciper grundade på social inkludering och likvärdiga möjligheter. Därefter redogörs för en gren inom den jämförande forskningen som har sökt åskådliggöra hur olika institutionella egenskaper i länders utbildningssystem inverkar på en viktig aspekt av dessa mål, nämligen inträdet på arbetsmarknaden. I den tredje och sista delen diskuteras den länderjämförande utbildningsforskningens möjligheter och svårigheter, med riktat fokus på validitetsproblemen vid försöken att skapa konceptuella modeller och jämförbara indikatorer. Rapportens preliminära slutsats är att fortsatta forskningsansträngningar framför allt bör inleda med att studera input- och processrelaterade aspekter i grundskolan, och dimensionerna stratifiering och standardisering i gymnasiet för att söka bedöma hur väl dessa institutioner lyckas förse medborgare med kunskap och färdigheter för mänskligt blomstrande.

¹ I should gratefully like to acknowledge helpful comments by Ola Sjöberg, Walter Korpi and participants at the Social Policy seminar at the Swedish Institute for Social Research on earlier drafts of this paper. The paper was presented at the 2nd Annual RECOWE (Reconciling Work and Welfare in Europe) Integration Week in Oslo, 10 June 2008 as a background report for the initiation of further comparative research on education systems and the tensions between work and welfare.

i.) Education and citizenship in the knowledge society

Everywhere educationalists and statesmen are aware that the changes which have occurred in the structure of contemporary societies, in their domestic economies as in their foreign affairs require parallel transformations, no less profound in the special area of the school system.

Emile Durkheim, 1904

1. The aims of education

The study of formal education or schooling is conducted in many disciplines, but for the present purposes at hand it is useful to distinguish between a philosophy of education and a sociology of education. The former is concerned with normative questions such as what education is for and which ends it ought to serve. The latter is on the other hand concerned with what education actually is, how it is organized and why, and what its consequences are for individuals or various spheres of society (Brint 2006: 1). Both shall concern us in this introduction.

For the first of these concerns I shall briefly state, following Brighouse (2006) without much deeper elaboration, that the main aim of education is to enable individuals to lead “flourishing lives”. An important aspect of this is to develop autonomy; the age-old Socratic ideal of “self-governance” (Nussbaum 1997), and schooling does this primarily through the transmission of knowledge. Autonomy in social life implies having the social goods and capabilities necessary for leading a life in society with which one subjectively identifies as being in harmony with one’s fundamental desires and interests.

This statement is loaded with what has often been regarded as a fundamental tension in sociological thinking. Is it in fact the organized and partly forced socialization, or the free and unhindered development of the child that the learning process aims at? The differing views on the matter in the history of the philosophy of education are abundant. According to one of the proponents leaning to the first view, education is “the influence exercised by adult generations on those that are not yet ready for social life. Its object is to arouse and to develop in the child a certain number of physical, intellectual and moral states which are demanded of him by both the political society as a whole and the special milieu for which he is specified.” In Emile Durkheim’s view, education is supposed to socialize the young by mending their individual and social beings, thereby reproducing society as a whole from one generation to the next (Durkheim 1956: 70). The needs of society are in this view quite pronounced, and the individual is to be socialized into a role intended and suited for him or her. As a philosopher leaning towards the other view, Immanuel Kant saw education as oriented primarily towards the individual: “The end of education is to develop, in each individual, all the perfection of which he is capable.” (Kant 1960) Education has individual ends, regardless of the surrounding social needs.

In a more recent contribution to this discussion, Amy Gutmann (1999) has proposed that we view education in democratic societies as aiming at “conscious social reproduction”. This is an apt

phrase for the idea that the society that we share needs to be re-created, through the transmission of its core structural qualities to its younger generations, but at the same time allowing for individual latitude of the exact nature of how this is to occur for the individual learner. “It follows that a society that supports conscious social reproduction must educate all educable children to be capable of participating in collectively shaping their society.” (Gutmann 1999: 39) Such a view is consistent with regarding the relationship between individual and society, or agency and social structure, as a duality, not a dualism. They both reinforce each other through complex interaction by ways of ‘structuration’ (Giddens 1984). This approach is fruitful and should in the following be regarded as the general analytical point of reference whenever we discuss different schooling processes.

In more general terms, formal education in today’s modern societies can be said to have three goals: i.) transmit school knowledge to the young; ii.) attempt to shape conduct and values; and iii.) prepare and equip students for positions in the class and occupational structure. (Brint 2006: 23) These three goals are all autonomy enhancing, for they transmit the main social resources to the young on their road to adulthood. The study of how this social phenomenon occurs is quite well suited for sociological inquiry, because sociology is a discipline whose fundamental concern it is to illuminate the relationships and interaction between social institutions and structures on the one hand and the individuals living in, through and shaping them on the other. The sociology of education thus mainly examines how this process occurs in the institutions of formal schooling, from pre-primary level to tertiary university level, to adult and further levels of education. But it also attempts to locate these processes within the wider society, relating them to other spheres such as the labour market, the political community, civil society, family and private life. As such, the organization of the institutions of education are subject to political controversy and conflicts over justice, for they allow individuals to access valuable resources which to a large degree influence which opportunities and risks they will face in the course of their lives. I shall therefore, in the following, try to set up a loose framework for how we can think of the institutions of education in relation to the welfare state, and the idea of social citizenship. That is, I shall relate a central aim of education – autonomy – to two fundamental principles of the welfare state – equality and solidarity.

2. Education and social citizenship

Citizenship is at the core of Western democracies. Its conception is ancient. The memory, often idealized, of the Athenian polity with its democratic constitution has often served as a guiding image of origin in modern debates about citizenship (see Thucydides 1998). The concept is at the heart of political theory because it defines membership in a social unit, and the particular rights and obligations associated with it. One of the most oft-cited analyses of citizenship was that of T. H. Marshall, who depicted a somewhat evolutionary development of citizenship rights through three consecutive stages. Citizenship evolved from the establishment of civil rights, to political rights, and finally to social rights (Marshall 1992). In institutional terms these were upheld by, respectively, the rule of law, liberal democracy and the welfare state. The last set of rights was quite open-ended in their scope. Marshall saw them as “the whole range from the right to a modicum of economic welfare and security to the right to share to the full in the social heritage and to live the life of a civilized being according to the standards prevailing in society.” (Marshall

1992: 8) Institutionalization of policy connected to the educational system and social services would, according to Marshall, extend citizenship and have consequences for the social class system, transforming qualitative inequalities into quantitative ones, status barriers into degrees of status, and thereby promoting social cohesion and equality. Education was to have a central part in the extension of citizenship, for without education few of the civil and political rights could be fulfilled. And this provision was not only to the benefit of the individual – by being provided with the cultural resources, knowledge and skills necessary for life in society – but it was also of public value: in contributing to the civic culture needed in a democracy, and in providing an increasingly technology dependent economy with skilled labour. It would, furthermore, also serve as a more just mechanism of stratification in society – one based on merit and equality of opportunity, not on hereditary privilege and unequal access.

The word ‘access’ seems to be at the core of Marshall’s idea of what social citizenship aimed at (Bulmer & Rhees 1996: 273). But access to what? In Ralph Dahrendorf’s view, offering a nuancing interpretation, it was a matter of entitlements, more than it was a matter of provisions (Dahrendorf 1996). The distinction is useful and valuable. Entitlements encompass qualitatively differentiable resources that are valuable in society, while provisions refer to quantitatively differentiable ones. According to Dahrendorf, the modern social conflict and the development of Western democratic societies has been “about attacking inequalities that restrict full civic participation by social, economic or political means, and establishing the entitlements that make up a rich and full status of citizenship.” (Dahrendorf 1996: 37) As one of the latest and most profound examples, the most extensive institutionalization of social citizenship, in terms of welfare states or “regimes”, was fundamentally brought about through the political power of organized labour (Korpi 1983; Esping-Andersen 1990). But this general development of the modern social conflict also intermeshed with the rising level of provisions through the extension of markets, the engine of wealth creation. One may say that every period in the modern age has been characterized by a conflict between two antagonists; *le citoyen* (in Swedish, *medborgaren*) and *der Bürger* (*borgaren*) – the former struggling for social justice, the latter amassing wealth (Dahrendorf 2007). The conflict itself is the living nerve of democracy.

The growth of provisions and the extension of entitlements are both necessary in order to create full citizenship: entitlements without provisions have no substantial meaning, while provisions without entitlements form an unjust society. But the two do not relate in the same way to inequality. For Dahrendorf, inequalities of provision can be legitimate for different reasons, for example as long as they cannot be translated into inequalities of entitlements, partly since such a dynamic is a medium of liberty and enables the advancement of life chances (Dahrendorf 1996: 41). The location where this translation occurs is of course subject to political controversy, but the gist of the argument amounts to saying, in Marshall’s terms, that equality of opportunity is central, not equality of outcome (Marshall 1992: 38).

But such a treatment does not offer an account of the precise scope of the social resources which social citizenship should encircle, that is the qualitative differentiation which entitlements refer to. In a path-breaking effort which challenged the then dominant utilitarian conceptions of justice and welfare, John Rawls can be said to have defined these as ‘primary social goods’ (Rawls 1972), whose just distribution would be assessed according to two principles of procedural justice, hypothetically chosen in an ‘original position’: the first arguing for the equal right to the most basic liberties which are compatible with the same liberties for all; the second legitimizing

inequality only in as far as it would be of greatest possible advantage for the least well-off and tied to positions which would be accessible to everyone under conditions of equal opportunities. It was precisely the measurement of the expectations of primary social goods which would give an indication of how well-off a representative individual was – and these were, according to Rawls, “things which it is supposed a rational man wants whatever else he wants” (Rawls 1972: 92); given in broad categories as rights, liberties, opportunities and powers, income and wealth.

Setting the extensive philosophical discussion on the principles aside, and focusing on the idea of basic social resources, two subsequent main lines of criticism were formulated against such a view of ‘primary social goods’, most clearly expressed by Amartya Sen. First, these goods fail to take into account the variability of contexts which influence their end-states, that is the possibility that the same goods will yield different well-being to different persons due to different social contexts. And second, that they fail to express the idea of right to *choice* or *opportunity* to their end-states, rather than just the end-states themselves. To solve this problem, Sen introduced the concepts *functionings* and *capabilities* (Sen 1992). An individual’s functionings defines an evaluative space expressing his or her well-being, which he or she in turn acquires through his or her capabilities. Now the capabilities concept is a prerequisite for developing a functioning, and as such incorporates the idea of choice and agency – an individual may or may not choose to use his capability to function in a specific way. It is a potential resource akin to the idea of positive liberty, but at the same time treated within the confines of negative liberty, as these two concepts have been treated by Isaiah Berlin (1997). Sen seems to have tried to bridge the gap between the two in order to flesh out a fuller and more dynamic view of human agency, although not without some conceptual difficulties and tensions, as pointed out by Cohen (1993).

Of course, the variety of functionings and capabilities is as vast as human experience allows it to be, and the issue of separating out those which are to be regarded as entitlements of social citizenship calls for further elaboration. Sen suggested early on that some capabilities are more fundamental than others, labelling them *basic capabilities*: “a person being able to do certain basic things” (Sen 1982: 367). It is quite reasonable to, in an initial step, regard the entitlements of social citizenship as referring to these basic capabilities. One can understand the idea of *social inclusion*, which today is often seen as a core aim of social citizenship, as referring to the right of access to, or provision of a level of capabilities without which one would not be able take part in, to use Marshall’s phrasing again, the civilizational heritage of society; or to use Sen’s, achieve the functionings which would encircle the relevant spaces necessary for participating in the social life of the community. It becomes apparent that it is quite difficult to define this threshold in a concise manner; the particularities and varieties of context deny such precision. Economic measures of poverty come close, yet are not always sufficient. But at the very least, social inclusion aims at transcending a multidimensional line which on one side is characterized by such circumstances and states as economic poverty, marginalization, homelessness, poor health, mental illness, illiteracy etc (Atkinson et al 2002), and on the other by decency in level of living. The sphere of relevant dimensions equals here the relevant evaluative spaces of functionings of the basic capabilities.

Once “included”, social citizenship can be expressed more as a matter of equality of opportunity, and this implies having equitable access to the main institutions which influence the structuration of life chances, positions and power through the various stages of the life course within the wider spheres of society.

Yet, there is also another sense in which the idea of social inclusion has often been used, and it is related both to ideas of equality as well as its sister, solidarity. It has something to do with what Norbert Elias called ‘social honour’; the sense that members in a community together are legitimately involved in a common enterprise, acknowledged through mutual recognition (Sennett 2000). *Recognition* is a central term, and while broad, it is closely related to equality and solidarity. But it also differs from these – from some more rigid notions of equality by its respect for difference, as well as from more collectivist ideas of solidarity by its firmer emphasis on individual autonomy and self-determination (Sennett 2003; cf Berlin 1997). It alters the way we regard notions of equality of opportunity as classic conceptions of meritocracy – that is acquisition of status and power along uni-dimensional hierarchies – in that it flattens the order of how different abilities and positions are valued. Such a view essentially treats equality as founded on the psychology of autonomy. “Rather than an equality of understanding, autonomy means accepting in others what one does not understand about them. In so doing, the fact of their autonomy is treated as equal to your own. The grant of autonomy dignifies the weak or the outsider; to make this grant to others in turn strengthens one’s own character.” (Sennett 2003: 262)

Finally, social inclusion also seeks to capture degrees of redistribution and or as the classic concepts of lower income inequality and distribution of resources of power between individuals, households or various groups, social classes or strata, in which case it tends to translate itself into *social cohesion*. In short, it can frame the compression of new inequalities that equal opportunities can give rise to. It has been shown that the design of social policy can be crucial for the shape of poverty and equality in a society, where in its “encompassing” form – exemplified by welfare state institutions in Sweden, Norway and Finland – it not only compresses these furthest comparatively (Korpi & Palme 1998), but also tends to emancipate along lines of class and gender (Esping-Andersen 1999). Social inclusion in the welfare state can then be regarded as concerned with the fine balance between individual freedom and autonomy on the one hand, and dependence with community on the other. This latter quality has been argued as essentially having a civilizing impact on social life (de Swaan 1988, cf Elias 2000). It expresses the conviction that life in a community bears with it rights as well as duties, liberty as well as responsibility.

To sum up, the role of education in relation to the welfare state should be seen as aiming at enhancing and extending life chances by general principles of social inclusion and equality of opportunity. It not only seeks to furnish every child with capabilities – primarily in terms of knowledge, but also socialization and transmission of values – for human flourishing, but also aims at offering equitable and quality education for wider and further participation in society.

3. Education in the knowledge society

Today, the debates and discussions on the importance of knowledge as a fundamental resource for individual and society are some of the most pronounced discourses on the conditions for social and economic development in late modern societies. The OECD:s policy recommendations often revolve around the need for further and more intensified investments in human capital, as

these are not only associated with a range of social benefits but also seen as crucial for development of technological skills and adaptation under the premises of globalization (OECD 2007). Similarly, the European Communities placed the further investment in education and training as one of the central strategies in achieving the Lisbon Agenda's aim to develop the European Union into one of the most competitive and dynamic knowledge-based economies and societies in the world (European Commission 2003). So also in governmental policy documents in most advanced societies, has the importance of education and knowledge taken a central role in the whole range of national agendas and goals, from increasing economic competitiveness to addressing issues of social justice and social cohesion.

In terms of theoretically based perspectives, the significance placed on knowledge as a fundamental resource driving economic and social development in advanced industrial societies was perhaps first most extensively stated by Daniel Bell with his thesis of the emergence of post-industrial society (Bell 1973). In such a society, theoretical knowledge was distinctive as constituting the axial principle of development. While knowledge, according to Bell, had always been central to the functioning of any society, here it became systematically involved in the applied transformation of resources and therefore superseded labour as the primary source of value. Another influential theory of today's advanced societies which extended this argument a decade ago was that proposed by Manuel Castells, where knowledge has now superseded capital, labour and land as the fundamental source of productivity and power (Castells 1996). In the 'global network' society the economic sphere is increasingly transformed into an 'informational' economy, whose core feature is production of and demand for information. For some social theorists such as Giddens (1991), the development of information and communication technologies has been one of the main driving forces of the present phase of economic and cultural globalization.

The political economy debates about this twin development of global integration and technological change have revolved around the presumptive choice for nations of developing into so-called high-skills or low-skills equilibria of production. In the former, employers provide high-wage and high-skills employment, while employees are employed with relatively high-level skills, and where they in turn as consumers have a supply of high-specification goods and services. In the latter, the opposite holds. It has often been pointed out that it is essential that today's advanced societies secure their competitive advantage in the global economy by moving into product markets that require a highly skilled workforce if standards of living are to advance and inequalities not to increase (Ashton & Green 1996). But such views, particularly those who advocate the constant upgrading of skills through the stimulation of ever higher educational attainment for the population, have also been criticized for being simplistic in relying on and advocating too heavily for supply-side policies, ignoring not only negative effects of over-education, but also emerging new patterns of inequality and social exclusion that partly come along with up-grading of skills (Brown & Lauder 2006). These can be traced to the increasing exclusion and difficulties of low-skilled workers and youth with low education to enter increasingly divided and segmented labour markets (Steedman & McIntosh 2001). A concrete example of some of the general trends that are distinguishable in several European societies in the 1990s can be taken from Sweden. In a context of economic transformation, changes in the institutions of educational provision towards more general and fewer vocational tracks on upper secondary level, and a general expansion of places in tertiary institutions was followed by a general increase in attainment levels, but also by polarization. As the larger amounts of school-

leavers with post-secondary degrees increased competition on the labour market, the parallel increase in amounts of youth without degrees on secondary level were pushed out into an even more precarious position, often with great difficulties of gaining entry into first jobs. It is an illustrative point that while the age of establishment in the labour market (the age when 75 percent of a cohort is employed) was 21 in 1987, it was 27 in 2005 (Olofsson 2005).

But, perspectives that too readily frame this development on a global level in terms of convergence have been criticized for not taking the particular and differing institutional contexts of various countries into account. So, Ashton & Green (1996) argue that the relationship between up-skilling and skill formation and economic performance needs to be seen in its institutional context, as well as a constant locus of political conflict. The likelihood of a country to develop in the high-skill route depends on numerous factors, one among them being the architecture of a country's specific vocational education and training system and its articulation in the labour market. The other important factors are: a ruling elite committed to the high-skills route, shown in both the management of the economy and the education system; sufficient amounts of employers also committed to this goal by both demanding high skills and providing means for further in-firm training; a regulatory structure controlling quality and quantity of work-place training; and incentives for workers to commit to up-skilling. Crouch et al (1999) have also sought to identify the conditions for the successful upgrading of vocational skills for the large mass of the working population in order to secure employment opportunities and their economic position, in a context where unemployment threatens through job-loss due to technological change or global low-cost labour competition. Focusing on vocational education and training, the authors stress that its expansion through governmental supply-side policies have various effects, and while the long-term consequences can be hoped to be beneficial, the short-term consequences are imbued with several problematic side-effects along with the positive expansion of opportunity: credential inflation can and does also create socially negative effects such as increased competition, insecurity and dissatisfaction when supply of labour is not met with corresponding demand. Their analysis further stresses the importance of taking the intricate interaction between different actors - primarily state, unions and firms - into account when assessing the effects of educational advance.

In present debates about the effects of globalization on social welfare it has been a common assumption that increasingly mobile capital is driving social welfare policy by threat of exit. But some authors such as Room (2002) argue that generous human capital investments can actually drive capital mobility by inducing entry, since reliable availability of high-skilled labour can attract capital, in turn preserving levels of employment and social protection.

Another approach that likewise takes both the institutional diversity of forms of capitalism and the connection between skill formation and social protection is the 'varieties of capitalism' approach (Soskice & Hall 2001). It is essentially actor-centred, which is to say that the political economy is seen as a terrain where multiple actors seek to advance their own interests in strategic interaction with others. "The relevant actor may be individuals, firms, producer groups, or governments. However, this is a firm-centred political economy. They are the key agents of adjustment in the face of technological change or international competition whose activities aggregate into overall levels of economic performance." (Soskice & Hall 2001: 6)

In the sphere of education and training, actors have different interests: firms face the problem of

securing a work-force with suitable skills, while workers face the difficulty of deciding how much to invest in different skills. The readiness of firms and workers to invest in firm-specific, industry-specific or general (transferable) skills here depends on levels of income maintenance and forms of employment and unemployment protection. Where these are high, skill formation will be more specific, since workers and employers interact strategically within an institutional context where long-term investment in skills is safeguarded in various ways. It is the 'co-ordinated market economies' which sustain such an equilibrium and they depend on education and training systems which produce high specificity of skills. The 'liberal market economies', on the other hand, with more fluid and flexible labour markets sustain systems of skills that are more easily transferable, since neither workers nor firms have as safe guarantees for the utility of long-term investments in high specificity of skills.

In this context, it should also be noted that regimes which rely on specific skills production will create more egalitarian societies than those with general skills. This is so because systems with well-developed and competitive vocational training systems can provide stable economic futures even for students who are not as academically motivated and strong, whilst these in systems for general skills have smaller chances on the labour market, as well as less incentives to do well in school.

But, such a proposition can be said to in other contexts have been characterized as a social cohesion vs. growth trade-off in choice of investment in the education system; the more extensive investment in upper-secondary educational institutions in many European countries, and the higher social cohesion which comes with such attainment levels can be contrasted to the higher investments in tertiary education in the United States, where in turn the higher quality of universities is associated with greater innovation and levels of growth (Brunello et al 2007). This trade-off could in the European case, argue these authors, be partly avoided if serious reforms of incentive mechanisms for universities in particular were implemented, where reward would be directed not only on the basis of research output, but also on the ability to supply the right type of skills.

If we then accept the general proposition that knowledge is of increased importance in our societies, we can expect that the organization of access to education and the knowledge and skills it can provide and offer, will be subject to intensified considerations for justice and citizenship, as well as economic and social development. The comparative study of the various ways that the education systems in different countries possibly manage to enhance and extend life chances, and do this according to the principles of justice inherent in the ideas of citizenship, can therefore be seen as an urgent task.

Education can thereby be studied as a right to social inclusion and equality of opportunity. For primary and lower secondary education, that is the levels which are compulsory in advanced societies, this would imply an analysis of the ability of these institutions to provide all pupils with education equivalent to a defined level of basic capabilities for these functionings. This would also apply to upper secondary education, since attainment at this level is very high in most advanced societies, although assessments of quality would take on a somewhat different focus, relating functionings to the spheres – further education or labour market – towards which exit is directed.

But on the higher levels of its institutions, that is post-secondary and tertiary, its characteristic as a right is more difficult to conceptualize. The difficulty stems from the fact that knowledge is a resource that is taught and learnt, appropriated through interaction between learner who studies and learning institution which teaches, not something that is simply handed down as a defined provision, and neither solely having the character of a legal status. Institutionally, it could be argued that two aspects of education institutions are important for an assessment of education's ability to extend and enhance life-chances according to rights-based criteria: i.) the qualities and types of the substantial knowledge and skills that are taught (related to their relative amounts, ie quantities of knowledge and skills), and ii.) the formal criteria which define access to these institutions, and the distribution of institutional resources that are connected to this access. It can be assumed that these two aspects are interrelated and interact with each other in various ways, as has been noted above and further stressed by the research literature on educational expansion, quality and inclusion, and credential inflation (see for example Shavit et al 2007; Müller & Wolbers 2003; Brunello et al 2007). For further and adult education, the institutional criteria for eligibility and access would be somewhat more important to study, as these institutions form mechanisms for social inclusion.

It should be noted that these views lie partly in line with the way that much social stratification and mobility research treats education's role in ideals for equality of opportunity (for an extensive review, see Breen & Jonsson 2005) by relating social background to attainment. But although this field of research has come far in terms of reach and sophistication, such studies tend to focus less on the *opportunity* part in *equality of opportunity*, with ready attention to inequalities of attainment, while to a lesser degree studying the actual quality of knowledge and skills attained; that is, the quality of what these institutions teach.

In the following review, I have only focused on research that I broadly regard as dealing with this aspect. This strand of research is quite substantial, and it illuminates the output- and process-subparts of the higher echelons of the education system (we will come back to these two conceptual terms in the third part of this paper) where exit occurs, by relating them to outcomes in another sphere of society: the labour market. It thereby also gives a wider view of the meaning and substance of the knowledge and skills that school-leavers bring with them into the world of work, and the weight and influence that these have on the structuration of their life-chances.

ii.) Review of research on qualities of knowledge and skills

This review of research on education institutions is preceded by an account of some theoretical implications formulated on the micro-level. These underpin many of the institutional approaches.

4. The link between education and work: micro-perspectives

One way of approaching the link between education and work is to develop theory that combines macro- with micro-levels. Most theories of the outcomes of educational attainment or human capital acquisition are formulated on a micro-level. But pure micro-approaches are not completely convincing since these processes occur within institutional contexts, whether they are schools, universities or labour markets. Consider the following: an individual's choice of education depends on which alternatives are possible to choose from, which in turn depends on the institutional design of the educational institutions - its number and places and the specialization of tracks and programmes, its admission fees, its eligibility criteria. The individual choices on a micro-level are constrained and enabled by the institutional structures on a macro-level.

Leaving this complex interaction aside for discussion further on, we can go on by looking at different micro-perspectives of how educational attainment affects labour market outcomes, because they are often implied in research about the institutional context. Three overarching lines of theorizing can be distinguished: the *productive skills*, the *positional goods* and the *social closure* perspectives (Gebel 2007). These can be graded along a scale of how much attribution one gives to the importance of social structures on the one hand, and agency on the other, for the measured outcomes. The productive skills perspective is the most agency-centred, the social closure perspective the most structure-oriented, with the positional goods perspective located in between.

According to productive skills perspectives, the outcomes on the labour market can be explained with the ability of education and schooling to equip the individual with skills and competences which raise his or her productivity. Employers are therefore also more willing to pay higher wages for this higher productivity, and hence there is a correlation between level of educational attainment and earnings. Following Schultz (1961), Becker (1964) and Mincer (1974) have specified the most elementary functions for this relation, where distinctions between specific and general skills in Becker's theory and the additional importance of work experience in Mincer's are important aspects. The exact relationship between educational attainment and higher productivity is a contested issue, but there is usually an underlying implicit assumption of education's effects on the development of cognitive abilities.

The positional goods perspectives look upon education as an individual attribute whose value is defined by its relative position to other similar valuable attributes according to some sort of social defined graded scale. In this view, employers who are about to employ act under conditions of informational uncertainty concerning the real productivity of an applicant, and must therefore screen the applicant's qualifications or educational certificates relatively by comparing them to other certificates on a value scale. Signalling theory, as formulated by Spence (1973), assume that

employer's must interpret signals or indices when they employ applicants. Indices are applicants' characteristics which cannot be changed or manipulated, while signals are, and the most important such signals are educational certificates. The reason for applicants to spend time in education is then to acquire such signals, not necessarily to develop skills. Another theory where the referential quality of education is seen as more important for employment than its intrinsic value is Arrow's screening theory (1973) where "higher education [...] contributes in no way to superior economic performance; it increases neither cognition nor socialization. Instead, higher education serves as a screening device, in that it sorts out individuals of differing abilities, thereby conveying information to the purchasers of labor." (Arrow 1973: 194) The educational institutions here "filter" through individuals with higher relative abilities, and it is this relative position that is used as an indicator by employers. In yet another similar model, Thurow (1975), has proposed that educational credentials and certificates actually signal learning abilities to employers who match applicants to jobs according to a *labour que model* – the most demanding jobs are matched with the assumed best potential learners.

The social closure perspectives are heavily structural in that they see the skills and competences of educational attainment as closely related to the wider power structures of society. Collins' *credentialism theory* (1979) explains the value of educational credentials because these signal controllability to employers; a certain level of socialized behaviour according to social norms that fits into the organizational structure of firms or bureaucracies. This means, in a wider societal context, that educational institutions reproduce behaviour that reifies and serves power structures of society, which Collins defines through the Weberian triad of power resources: class, status and party.

In a similar vein, Bourdieu and Passeron's *cultural capital theory* (1977) also see the educational institutions as reproducing a society's form of social stratification by rewarding pupils and students who embrace and display the appropriate cultural codes, symbols and behaviours accepted as relevant in society and associated with higher strata positions. Schools then both affirm and equip individuals with the cultural capital that is necessary for success on the labour market – especially the higher positions – and employers make their employment judgments based on the job applicant's amount and form of capital. There are also other similar theories of educational systems as sites for social reproduction of power resources; the work of Bowles and Gintis (1976) depicts schools as serving the interests of business elites and as perpetuating and legitimating a system of social stratification strongly skewed in favour of the privileged.

For the ensuing review, it should be noted that it is primarily the positional goods perspective's critique of a simple productive goods approach which is of relevance when studying the institutional connection between education and work. It has long been a standing critique of human capital theory that it does not take into account the qualitative differentiation of different forms of skills and knowledge; a differentiation that depends on the particular institutional context wherein actors interact.

5. The link between education and work: institutional perspectives

If the choices of individuals in schools and the level and type of education attained depends on

structural contexts these must be the actual design of the educational institutions. The body of research that has tried to study this design has followed a deductive line of reasoning where formulated hypotheses about the structural qualities of educational institutions have been tested on indicators of labour market outcomes. Structural flows on the labour market are assumed to give an indication of the structural qualities of national educational systems. Allmendinger's study (Allmendinger 1989) stands out as a common point of reference, and it is worth to discuss this study at some length. According to Allmendinger, educational systems should be studied by focusing on two dimensions: their degrees of *standardization* and *stratification*, thereby enabling a typology of these systems. The degree of standardization in a country's educational system tries to capture to what extent the quality of education "meets the same standards nationwide. Variables such as teacher's training, school budgets, curricula and the uniformity of school-leaving examinations are relevant in measuring the standing of an educational system in this dimension" (Allmendinger 1989: 233). The degree of stratification refers to "the proportion of a cohort that attains the maximum number of school years provided by the educational system, coupled with the degree of differentiation within given educational levels (tracking)" (ibid.). Using these two dimensions, Allmendinger evaluated three national educational systems at three different levels – primary and secondary education, higher education and vocational training – in the US, West Germany and Norway relative to each other.

On primary and secondary levels, the US system showed a low degree of standardization and stratification, the Norwegian system a low degree of standardization and stratification on primary level, but high degree on both dimensions on secondary level, and the West German system a high degree of both standardization and stratification. Even though the administrative centralization was low in both the US and the West German system – two system's that are the most different from each other in the industrialized world (Brint 2006: 43) – the resulting quality of different schools varied to a by far larger extent than in West Germany, where in turn several institutional mechanisms were present so as to enable more standardized examinations and admission criteria. The high degree of stratification in the West German system reflects the early tracking features of the educational system – at age 10-12, pupils are streamed into three different tracks which lead to different levels of further education and subsequent occupations, from blue collar work, to technical jobs, to academic careers.

In higher education, the American system showed a lower degree of standardization than the West German and Norwegian systems; in the latter, the universities are all state institutions which should adhere to the same standards, while in the States, universities vary considerably in terms of ownership, size, content and quality of faculty which produces students with very heterogeneous knowledge and abilities. On the stratification dimension, the West German and Norwegian universities show a low degree, because all eligible students have access to these institutions and all finish with a single-level university degree. The American system is on the other hand highly stratified; admission of students is selective and dependent on the criteria of the specific selection procedures and admission fees, and there are several graduation levels.

For the evaluation of vocational training, Allmendinger distinguished between four different types: training in general schools, training in vocational schools, apprenticeships in firms, and on-the-job training. The degree of standardization is higher whenever training takes place in schools or as apprenticeships, due to its more general content than in on-the-job training which is more firm-specific. The same applies to the stratification dimension, since eligibility for admission to

schools or apprenticeships is more universal than being hired by a specific employer, who in turn decides the content of training without external regulation. Norway and West Germany provide unstratified systems – especially in West Germany, the dual system where students do apprenticeships in firms while also spending a few days of the week in schools, is very common and popular – while the United States has a stratified one. The US provides an unstandardized system, whereas Norway and West Germany furnish mainly standardized ones. In terms of opportunities for students in these systems, Allmendinger concluded her evaluation thus: “in the United States, unstratified school systems are used at the primary and secondary level and each individual thus has a higher opportunity to obtain the maximum number of school years provided by the system. But opportunities are curbed by stratified higher educational systems that aim to secure status barriers. In West Germany and Norway, where highly selective and restraining mechanisms prevail at the lower levels of the school systems, brakes at the upper level are not needed, and opportunities are more equally distributed among those who reached this level.” (Allmendinger 1989: 239)

The subsequent analysis of labour market outcomes based on retrospective life course data allows Allmendinger to draw conclusions that, in fact, these dimensions of educational institutions do matter for the patterning of how educational attainment affects occupational rewards. The core idea of the two dimensions relevance for labour market outcomes is that high degrees of standardization provide employers with credible signals about the expected skills of job applicants, and the matching is therefore tight between education and work; the transition is smooth and does not require repeated job shifts to achieve a ‘fit’. High degrees of stratification will also affect matching to intended jobs; the link between education and occupation is tight, in as much as it is connected to a differentiated occupational structure. To sum up: most occupational transitions in early careers are expected in unstandardized and unstratified educational systems, while least shifts will occur in systems with the opposite characteristics. The empirical results largely confirmed these hypotheses.

In a review article, Kerckhoff (2000) applied Allmendinger’s two dimensions, along with a third one – “the degree to which the educational credentials awarded are general academic ones or specialized vocationally relevant ones” (Kerckhoff 2000: 455) – in a descriptive analysis of the educational systems in France, Germany, the United Kingdom and the United States. The German and the American education systems represented opposite poles on both two first dimensions – as in Allmendinger’s study – while Britain and France were placed in between; the French system characterized by a bit of a higher level of standardization. Partly following Stevenson & Baker (1991), Kerckhoff placed a more pronounced weight on the extent of national centralization of educational provision in his assessment of standardization. Generally, the European education systems are placed under tighter central control, in various forms, than the American. The assessment of the last of Kerckhoff’s dimensions is closely related to the first; system’s with high degrees of stratification usually also offer more specific programs at upper secondary and higher education, and thereby more specific educational credentials. These have implications for the transition to work life, since a higher vocational specificity is more closely related to a particular occupation. Germany again stands out with its dual system which prepares students for some 450 different occupations. Its higher education also has a heavy emphasis on occupationally specific programs of study. In France, the credentials offered are among the most general in Europe, seldom as specialized as those in Germany and Britain. The American system displays clear vocational specificity only at the level of postsecondary and tertiary education, but

these are comparatively weak at the undergraduate level.

A few other studies where the US system has been compared to others should be mentioned as well. Compared to Britain, Winfried et al (1989) found that there was a stronger association between educational credentials and first job in the States. In Britain, the intended job was reached after more job-shifts. The results partly disproved Turner's (1960) influential theory of *contest* and *sponsored mobility* in the two countries; the former regulating social stratification in the States with a greater openness, while the latter reserving higher occupational positions for elites. In another study comparing the US and Japan, Rosenbaum and Kariya (1991) found that the influence of high-school grades was greater for occupational attainment in Japan than in the US, concluding that in the US educational system, school performance has little pay-off for job attainment.

In a study of Sweden, where the status of educational credentials as an allocation criterion was studied, Erikson and Jonsson (1998) argued that four features of the Swedish school system could be regarded as important for the allocation process. First, the weak relationship between vocational schooling and labour market actors means that primarily general occupational skills are taught in the vocational tracks at upper secondary level. Second, compulsory and upper secondary levels of the education system are highly standardized and the allocation of resources is centralized. Third, these levels are also characterized by low stratification, with an absence of final examinations and ability tests. Finally, the education system is characterized by an absence of dead-ends; even vocational tracks give opportunities for further education, and a system of adult education provides extensive 'second-chances' (Erikson & Jonsson 1998: 372f). The findings of the study primarily point to level of education being most closely associated with occupational position, where the most distinctive divide is between those with tertiary degrees, and those without. Type of degree is also important to consider in order to give an accurate picture of the allocation process: roughly half of its impact on occupational prestige stems from its channelling into various industrial branches with their particular opportunity structures (Erikson & Jonsson 1998: 400f).

Allmendinger's type of study has been replicated and developed numerous times, with more or less nuance, precision and inclusion of more cases compared. Müller and Shavit (1998) coordinated a comparative study of school-to-work transitions in thirteen countries. The different patterns of this process were taken to account for the different institutional contexts within which they occurred, the characteristics of educational systems and labour markets being the most important. The assumed relations between the two inform the analytical concepts used to develop typologies. The production of skills within the education system and the utilization of these in the labour market is central; the dividing line stretching between general skills and specific skills. In what are labelled *qualificational spaces* (the term 'space' referring to the linkage between education and the labour market, initially developed by Maurice, Sellier and Silvestre (1986) who compared these in Germany and France) the skills learnt in schools are quite specific, a high amount of them having a corresponding occupational match. Countries with these institutional contexts will have a close match between educational credentials and occupational position – that is, the transition to the first job will be quick and the employee will very likely remain in that occupation throughout work life. In what are, on the other hand, labelled *organizational spaces* the link is weak since the educational system equips school leavers with general skills which are more difficult to assess for employers, and the transition from school to work involves more

shifts between jobs and more on-the-job training in order to develop the specific skills needed. The value and demand of educational credentials is assumed to differ in the two spaces; in occupational spaces the value of credentials is less easily inflated since it is mediated by skill, rather than relative ranking according to labour-queue-models such as Thurow's.

The results from the study largely confirmed three stated hypotheses. First, stratification in an education system enhances the magnitude of educational attainment's effect on prestige of first job and entry into the service class. Second, vocational specificity in an education system strengthens the association between qualifications and labour market outcomes, particularly enhancing the odds for entering the labour market in a skilled blue-collar position than an unskilled one. Third, the larger the national proportion of tertiary degree attainment, the weaker the association between qualification and occupational position.

In a later study, Gangl (2001) used a similar typology to study school-to-work transitions, with added outcome variables. Gangl employed a somewhat modified institutional typology, referring to *internal* and *occupational labour markets* instead, but the essence of the analytical construct was similar. It is related to and bears the name of Marsden's (1990) typology, and employs more hypotheses related to the patterns of labour market entry in school-to-work transitions. The key difference between internal and occupational labour markets are, as in two different spaces discussed above, the presence of an education system providing occupationally specific skills which leads to different patterns of labour market entry. In an internal labour market, entrants have general skills and it is instead their work experience that is their main asset in acquiring jobs. The entry process here is much less tightly structured by education, less orderly, involves more job shifts and career contingencies. In an occupational labour market, experience is not as important since the skill-specific credentials allow for tightly structured labour force integration.

Studying these labour market entry processes in twelve European Union countries with cluster and discriminant analyses, Gangl found that "there is a larger role for experience effects and worker mobility in channelling the flow of individuals into positions" in a set of Northern European countries, namely United Kingdom, France, Ireland and Belgium, which would then conform to an internal labour market cluster, than in a set of continental European countries consisting of Austria, Denmark, Germany and the Netherlands, making up an occupational labour market cluster. Still, the approach using these kinds of dichotomous typologies was concluded to be limited for 1.) explaining more detailed differences within clusters; 2.) explaining to what extent the differences were due to institutional and not to structural factors, such as e.g. differences in macro-economic conditions; and 3.) explaining structural features of labour market entry in a set of Southern European countries where other kinds of institutional links and mechanisms seemed to be of essence.

6. Stratification and vocational specificity

In most of these studies, the amount and form of vocational training offered in the educational system is central for understanding the different patterns of transition from school to work – it is the institutional feature of education systems that sets countries apart. Yet, the debates on the role of vocational education – primarily on the upper secondary level – have been cast between those

who view it as “tracking” of students and thereby a diversion from higher level studies, and those who see it as work preparation and learning of specific knowledge which increases the chances of getting a skilled job and decreases the risks of unemployment (Müller & Shavit 2000). As such, it is also located in the general discussion of the role of the stratification dimension in educational systems: the extent to which pupils and students choose different programmes which lead to different degrees and levels of study, and how this is related to the structuration of life chances in educational systems.

In one field of research debates, Blossfeld (1994) has argued that vocational training, particularly if organized as in the German dual system, is well suited for supplying an occupational structure which is challenged by an increased rate of change of necessary skills, for the reasons usually referred to in research, discussed above. Additionally, if the design of the training is set up by state, employer and employee-organization, the precision of the curricula and training content is enhanced for a better fit with the intended occupation, although need for improvements can be identified at many points. Also, the high rate of standardization of certificates is beneficial for transitions, an aspect of vocational training which Buechtemann, Schupp & Soloff (1993) see as the main challenge for improving the American system of community colleges and technical institutes if they are to become more effective in promoting the quality of matching to jobs. Due to the de-centralized regulation of this kind of training in the States, such reforms are difficult to implement.

The American system of vocational training has in other studies been shown to have low labour market value in as much as these qualifications have a weak effect on earnings. Grubb (1995) and Lewis et al (1993) found that significant effects on earnings could only be found for women, not for men. Kerckhoff & Bell (1998) found similar gender differences in earnings effects of postsecondary vocational training, although variation was primarily identified between different *kinds* of credentials, concluding that a more systematic data collection and analysis was needed for further research. The need for differentiation has also been identified in studies from the Netherlands (Dronkers 1993) and Sweden (Olofsson & Wadensjö 2006), where in the latter programmes with well-defined occupational content and nationally standardized certificates were found to be correlated with positive labour market outcomes.

In a somewhat differently articulated line of debates, the tracking that vocational training often implies has been argued to impede on student’s possibilities to continue to higher studies, instead reproducing class differences or segregation. This has by some been seen as an inevitable result of the fact that students have different abilities where the negative effects can be compensated with higher quality teaching (Hallinan 1994), while it by others has been looked upon as an inequitable sorting of students into different status groups and reproducing social inequality over generations (Oakes 1994).

For vocational training in particular though, several researchers have argued that even though these programmes decrease the chance of student’s attending colleges or universities and thereafter finding jobs in higher occupational positions, they also increase chances of employment for students who otherwise run the risk of experiencing spells of unemployment in early working careers. Therefore, these two consequences should not be seen as mutually exclusive, but as the flip side of the same coin (Arum & Shavit 1995; Shavit & Muller 2000). Similar results were found by Korpi et al (2003) in analysis of transitions in Great Britain, the

Netherlands and Sweden, where vocational training reduced career precariousness at the transition from school-to-work, while not having any effects after establishment on the labour market. For later unemployment, general skills, presumably because of their transferability, were indicated of having higher value for finding a new job.

To summarize, the institutional analysis of the links between education systems and labour markets in different countries, has most often been differentiated according to a dimension of specificity of skills. The differentiation between general and specific skills, as well as general and vocational skills is common in the qualitative distinctions of outputs from the education system.

iii.) Comparing education systems

The comparison of national education systems, or education in general, suffer from some of the common problems and challenges of comparative research, but also some specific ones inherent in the subject as such. I shall here go through some of the most discussed methodological problems. Following this discussion, while still in its trail, I will take up the main aspects of developing conceptual models of education systems. The translation of these into empirical indicators and the difficulties that can arise here will be elaborated upon thereafter, in turn followed by discussions of which kinds of variables can be combined to form these indicators. I shall finish with a discussion of possible choices of classification schemes and indicators for various kinds and levels of knowledge and skills produced in education systems.

7. Methodological difficulties in comparing education systems

The aims of comparative education – of comparing education systems or institutions – are according to some the illumination of general laws, while they for others are a way of exposing particular features of cases. This tension exists generally in comparative research; whether its aim is to search for universals or elucidate the unique (Scheuch 1990). Proponents of the first position, such as Lawyrs (1973), see it as nourishing a hope that “it may become possible to provide a body of general principles which would help to guide policy makers and reforms by predicting, with some assurance, possible outcomes of the measures they propose.” Proponents of the second position, such as Stenhouse (1979), see it as intending at bringing the individual into clear relief, by using the general as background. Any generalizations are refrained from; instead it is particularity and the unique characteristics of the object of study that are of interest. Such comparisons of case studies rely on judgemental assessment of probabilities, which is preferable for it uses “insight rather than law as a basis for understanding.” (Stenhouse 1979: 5)

Practically, attempts at comparing education systems must deal with several problems, of which the most significant seem to be the following:

i.) the functionalist argument: education systems need to be seen as a whole, and its various parts only acquire their meaning when put in a holistic frame where their unique character can be understood. The German dual-system is for example only fully comprehensible if the institutional complexity surrounding it is taken into account; a complexity that does not exist in other education systems;

ii.) the argument of semantics: the language used for describing different aspects of the system is only comprehensible within the context used, and translation across national boundaries often strips away much of its meaning, or distorts it in a way so as to invalidate comparison. One cannot simply translate an English *A-levels* to a German *Abitur* to a Swedish *studentexamen*, because even though they broadly represent what can be labelled as an upper-secondary level degree, their content will diverge depending on their setting. (Bynner & Chyholm 1998: 136) Similarly, *primary school*, *grundskola* and *Grundschule* are also not equivalent, one difference being that they extend through different age-periods of differing length. (Grant 2000: 312) Another example is the general translatability of the widely used term ‘skills’. What is called

'skills' in Great Britain is in many ways different from the nearest term in for example Germany, 'Qualifikation'. The differences stem not only from distinctive semantics, but also from different socio-political roles of qualifications connected to different industrial structures and systems of regulating vocational education (Clarke & Winch 2006).

iii.) the cultural argument: an education system is embedded within a wider cultural frame from which many of its aspects partly derive their meaning and function. So for example, Bynner & Chyholm note, the term 'youth' will have different meanings in different countries, and will therefore also affect the way relevant areas for research on 'youth-transitions from school to work' are perceived and identified. One way of treating this problem is to focus and restrict comparison to formal institutional structures only, defined by official legislation.

iv.) the question of level of analysis: is it implicitly valid to generalize about the characteristics of an education system across the whole country, or is it more methodologically sound to stop at some lower level? In short: how do we define the representative sample of a national education system if it consists of a high level of variety? Grant (2000: 312) argues, for example, that it is much more difficult to generalize about education in the United States than in Great Britain, since the American system is more decentralized and encompasses more variety in a number of respects than the British system. The same applies to the temporal dimension: how wide should a cross-sectional "snapshot" of different systems be?

v.) the question of focus of analysis: are we to study, as is often the question here, the nation as unit of analysis or as context of analysis? According to Kohn, the difference lies in whether we are interested about different *countries* as such, or about the *social institutions* under investigation as such (Kohn 1987: 714). The distinction might be considered quite problematic, and is related to the quantitative/qualitative divide, but its essence lies in the problem of defining which social unit, particular or general, the research undertaken ultimately aims to investigate.

In short, as has been noted, many of these problems refer to the classical divide between qualitative and quantitative approaches. According to Ragin (1987) the advantages with qualitative approaches, which he refers to as mostly being case-oriented, is that they through the holistic approach can examine causal complexity; have a more intense dialogue between ideas and data; can suspend strict assumptions of equivalence of cases and conditions; and can address specificity. Some of the disadvantages are that they are limited to a smaller number of cases (Ragin 1987: 51f).

Quantitative approaches can on the other hand treat large numbers of cases, where the analyzed relations are understood only in the context of the analysis of the entire population, which is of advantage if, as is the case here, the aim is the identification of general laws discernable across many societies and countries. Here, the dialogue between idea and data is conducted in terms of the discussion of specification issues, and while statistically robust judgement is possible, particularity which can be of essence is lost. One draw-back from this approach is that complex causal arguments are much more difficult to test (Ragin 1987: 65f).

Nevertheless, despite the arguments from qualitative methodology of the difficulties to compare national systems of education, we can seek quantitative comparison to be validated by a precise assessment of which levels of inference are apt for comparison. The remaining part of this paper

will deal with this issue, above all discussing which conceptual models and empirical indicators can be used for quantitative comparative studies.

8. Conceptual models or dimensions of education systems

Any development of indicators of education systems need to be firmly based on a conceptual model of the system's relevant dimensions. Such a statement implies a descending approach, and I shall discuss some of the proposals for such models that have been presented in research. I will here also discuss their feasibility, both as theoretical constructs and as guiding tools for indicator construction.

The need for conceptual models as guiding frames for indicator development is most often formulated consensually, and motivated for several reasons. Johnstone (1981) sees the model as a guiding principle which can ensure greater consistency in indicator development, as well as a valid differentiation of the indicators' conceptually distinct concerns (1981: 24). Such a frame's additional advantage is that it allows for identification of which parts of the system that presently lack data. Nutall (1994: 93) uses the term "frame" for these models, because of its more loose character compared to theoretical models, since any specific causal implications are refrained from. Instead, "a framework [...] embodies the available limited knowledge of empirical relationships and that begins to relate malleable variables to desirable outcomes without appearing to promise too much." (Nutall 1994: 84) This also means that a conceptual framework can develop through several stages, with increased complexity, as the relationships between indicators become more apparent, and further guiding relationships can be proposed. Ultimately, conceptual models are most often derived from some kind of general theory of education which states the core propositions and hypotheses of the education process.

Which are most often regarded as the main features when conceptualizing education systems? In a review of a range of conceptual models used for education indicator development, van Herpen (1992) defines a conceptual model as specifying "the relationships between a set of related concepts. A conceptual model is the first step in formalising a theory." (van Herpen 1992: 26) The abstract concepts themselves, in turn, are represented by one or several indicators, which most often consist of some form of weighting of several variables. The most common conceptual model has a simple three-folded structure, and the variation on top of this foundation is wide.

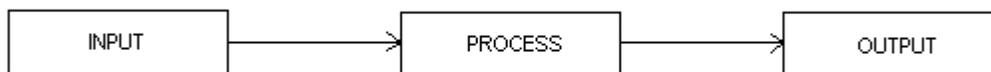


Fig. 1. The common input – process – output model.

So for example, Oakes (1986) depicted the three core parts as consisting of the following sub-categories:

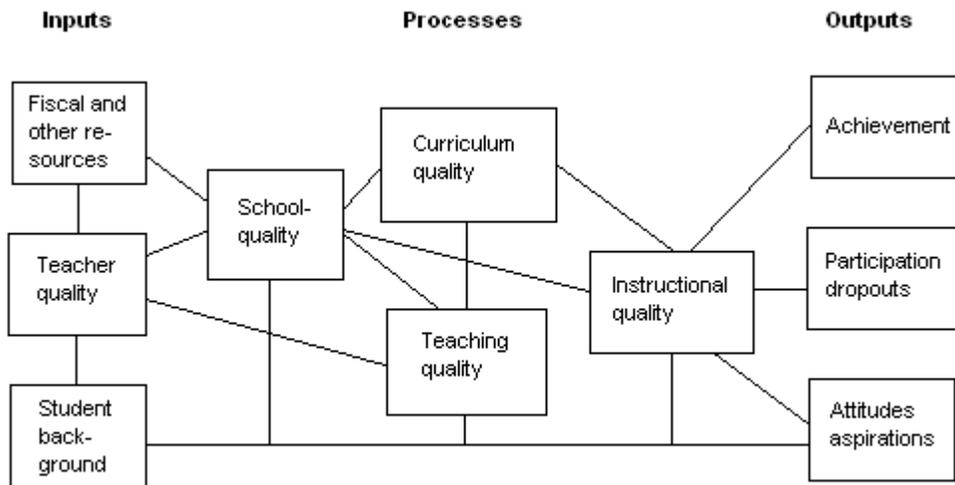


Fig. 2. Oakes' (1986) comprehensive model of the education system.

Johnstone (1981) has also proposed an elaboration of such a conceptual model, although he calls it a frame which can loosely define the main features of an education system. This frame also locates the system within a wider societal context, that is the environment of the system.

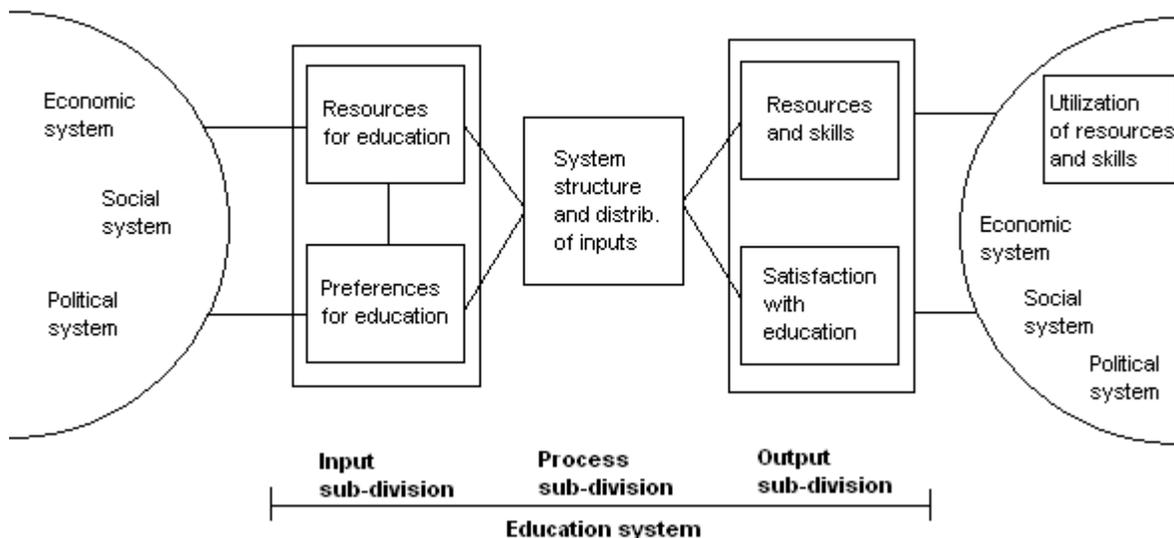


Fig. 3. Johnstone's (1981) proposal for a conceptual model with environmental relations.

The input, process, and output parts are here more extensively elaborated upon. Johnstone defines the indicators of each in the following way:

- Educational input indicators are either indicators relating the amount of a particular quantity taken by an education system to the total amount available

for distribution or indicators describing the aspirations held by a society for education systems.

- Educational process indicators are those indicators describing the structure of the system which processes the inputs to become the outputs or those indicators describing the distribution of the inputs throughout the education system.

- Educational output indicators are either indicators relating the amount of a particular quantity leaving an education system to the amount with some similar characteristic which is available to leave or indicators describing the perception by a society of the results of education systems functioning. (Johnstone 1981: 27)

The proposed three-fold distinction between input, process- and output is not clear-cut. Particularly, indicators which are defined from the output-subpart can also give an account of structural qualities of the education system which are defined as being of the process-subpart.

Selden (1990) offers a general discussion of how elaborate these conceptual models should be. Developing a too detailed model can be a trap, because indicators can in such a case become difficult to interpret, and their abundance must then in turn be summarized for those who use them. Too simple models will most likely not be able to capture the distinctive and sought after features proposed in the research question. Neither is it feasible to seek to define one generally endorsed model for all research on education systems, since, as Mol & Kaiser (1992) argue, different perspectives on education will need different models. Even if it would be possible to develop such a model, its full empirical representations in a valid and accurate set of indicators would not be possible to assemble, due to problems of measurement. Thus, if the precise meaning of indicators cannot be inferred deductively, due to all the ambiguities, a better approach should be to develop models based on inductive and as unambiguous interpretation of indicators as possible. Mol & Kaiser therefore argue that a starting point can be the main indicator identified as explaining the similarities or differences one is interested in between different systems, and then composite sets of variables related to this indicator could be elaborated to illuminate the foundation of its variances (Mol & Kaiser 1992: 318).

The challenge of developing conceptual models is then an issue of choice of level of abstraction, which again is related to the trade-offs between case- and variable-oriented approaches. On the one hand, one needs to move beyond nationally specific characteristics of education systems in order to generate models adequate for analysis of several countries, which at the same time still appear to be rooted in the experience of the specific national context. One possible approach to deal with this tension is to develop conceptual models with the aim of typology development. This implies an expectation that variable-based statistical analysis might yield clusters or groups of countries whose education systems conform to a set of common characteristics which can be understood holistically, and as a result of common features of historical development. The strengths of comparative research may thus be utilized, since this can illuminate both similarity and difference.

9. Construction of education indicators

The discussions about the exact definitions of an indicator are wide; here a conventional approach used by Johnstone (1981) will be taken. An indicator lies between the concept it is supposed to represent, and the variables from which it is usually constructed. The positions

between these depend on their level of abstraction. An education indicator is supposed to make a general comment on the state of the social phenomena called education, rather than a detailed account – to “summarize a large amount of data in a succinct way so as to form a general, overall comment. Indeed, an indicator might combine 10 or more variables to provide its comment [...] the summary conveyed by an indicator does convey the essence of what an overall situation is like.” (Johnstone 1988: 453) Three other characteristics are fundamental: an indicator is distinct from a variable (composed as it is of several of these), it expresses a quantity and its values are temporally bounded (Johnstone 1981: 3f).

The use of indicators in comparative research of education systems, for example in order to develop typologies, is an advantage for several reasons. If one uses a large number of single variables to measure patterns the amount of data will be too diverse and wide to be able to give a view of which similarities are really defining a cluster of systems. Classification by only using a small number of individual variables will on the other hand not provide sufficient validity. Indicators, instead, will when properly formed minimize both of these errors in classification (Nuttall 1994).

How are they to be formed then? Usually, they are assembled by some combination of variables and thereby forming different kinds of indexes, of which the composite index is the most common. Also, other distinctions in kind are those between education system indexes which express absolute or ratio measurements; stock or flow measurement; and overall or distribution measurement.

There are issues of validity that need to be addressed when forming indicators. For internal validity, three problems seem to be most common, and should be avoided: i.) fractional measurement, which occurs when less aspects of an indicator are measured than which are actually identifiable; ii.) low reliability of concept, which occurs when the concept is actually different for different systems, while the same indicator is assumed to be the same. This is related to the tension between qualitative approaches to defining education systems, as opposed to quantitative. iii.) The choice of variables for the indicator which are actually known to be inadequate for representing the concept. This is also called ‘concept substitution’. One example is when an output indicator such as achievement level is not being measured as achievement test scores, but as graduation rates, simply because the latter are the ones available (Johnstone 1981: 56f).

For reliability, the process of data collection can be quite heavily loaded with procedures that decrease reliability. Four sources of measurement error are mentioned by Johnstone: i.) the consistency of applying an operational definition; ii.) the data collection procedures; iii.) the data collection instruments; iv.) the data processing procedures. In comparative studies, where several researchers might be involved in this process, these errors are likely to occur unless coordination and organization of the data collection is well synchronized (Johnstone 1981: 59).

For external validity, the problems inherent are located in the development of a valid conceptual model, as discussed above.

10. Conceptual schemes and indicators of stratification

The most commonly used system for classification of national education systems is UNESCO's ISCED 97 system. It can be regarded as a conceptual model which aims at identification of institutional structures in a nation's education system with a construct validity high enough for international comparisons. ISCED 97 is said to be "designed to serve as an instrument suitable for assembling, compiling and presenting comparable indicators and statistics of education both within individual countries and internationally" (UNESCO 1997). The basic unit of analysis is the 'educational programme', which is defined on the basis of its educational content as a sequence of educational activities organized to accomplish a specific learning objective. The units are cross-classified along two core dimensions: levels and fields of education. The levels are divided into seven parts, ranging from pre-primary to second stage of tertiary education:

ISCED 0 – Pre-primary education

ISCED 1 – Primary education or first stage of basic education

ISCED 2 – Lower secondary or second stage of basic education

ISCED 3 – (Upper) secondary education

ISCED 4 – Post-secondary non-tertiary education

ISCED 5 – First stage of tertiary education

ISCED 6 – Second stage of tertiary education (UNESCO 1997)

The fields are divided into 25 different fields, which are placed in broad groups defining those fields with assessed relevant similarities. There are several orders of criteria used for the assessment of which level to apply to a certain form of educational programme, where the primary criterion is the educational content (UNESCO 1997). In practice this criterion is measured by so-called proxy criteria, of which the most common are i.) typical starting age; ii.) duration of programmes; iii.) entrance requirements for programmes; iv.) intended destination of graduates; and v.) types of qualifications awarded.

In this paper's context, it is the exit-parts of the education institutions that would be interesting to classify according to ISCED, that is secondary, upper secondary, post-secondary and tertiary education can be seen to represent the output-part of the institutions where school leavers exit with different kinds of skills and knowledge. How does ISCED classify these in a system? And is the classification readily apt for comparisons? On secondary (2), upper secondary (3) and post-secondary levels (4) the programme orientation is classified into either *general*; *pre-vocational or pre-technical* education; or *vocational or technical* education.

On tertiary level (5) programmes are divided into theoretically based ones leading to research and professions with high skills requirements; and those with more practical/occupationally specific content geared for employment in a particular occupation or trade or class of occupations and trades.

Now these dimensions seem to correspond vaguely to the common general/specific divide often applied in research on stratification. In principle, all supposed exit-points at levels 2-4 are vocational, since these are defined as education that lead "to a labour market-relevant qualification", while the general and pre-vocational streams lead to the next level in the system.

The distinction with the latter two is that the pre-vocational stream leads to a vocational stream at the next level, while the general stream provides access to all three streams on the next level. These vertical definitions are then actually also capturing expected duration of education in the next stage, rather than only skill or knowledge specificity.

In the actual conduct of ISCED classification there appears to be a substantial amount of validity problems. Distinctions are difficult to make across levels, as well as within levels. For the latter, due to the more commonly occurring characteristics of greater heterogeneity, shorter average length and higher specificity among vocational programmes, these are more difficult to classify. Furthermore, there seems to be a trend towards more general content in vocational streams in many developed countries, thereby blurring the vertical conceptual distinction of the ISCED-scheme (UNESCO 2006). There are also problems of cross-level categorisation for vocational programmes in some countries, where the first part is categorized on one level, while the last is categorized on the next level.

On tertiary level, ISCED 5, the definition of general and vocational programmes does not apply in the same sense as on the lower levels – neither is the “programme criterion” used here. It is even doubtful that there is anything that can actually be termed general on this level as on the lower ones since all programmes lead to a qualification which is intended for labour-market entry, and specialization is a prevalent characteristic. Rather, it is the length of the programme that defines its “vocational” or “technical” (as defined by national authorities) as opposed to “general” character, since a short programme contains a relatively higher amount of practical learning. Formally these are distinguished as either “theoretically based/research preparatory/giving access to professions with high skills requirements programmes” or “practical/technical/occupationally specific” programmes (UNESCO 1997). On this level, analysis of the structure of qualifications is of greater importance for classification.

There are a number of issues that need to be addressed when using common education indicators in combination with ISCED-codes.

- i) Gross enrolment ratios may be difficult to calculate, particularly for vocational programmes since it is more difficult to define the theoretical age group in these.
- ii) Measures of progression may be of little relevance for vocational programmes since these can vary in duration substantially, from 6 months to four years, within the same ISCED-level. A usual measure of progression such as survival to a given grade will therefore be invalid.
- iii) Financing: distinguishing the resources devoted to programmes of different orientations can be particularly difficult, since these are often offered by the same institution (UNESCO 2006).
- iv) Attainment-levels may be difficult to use for comparative purposes, as some countries measure these as school-stages reached or completed, while others measure qualifications obtained (Steedman 1999).
- v) Collection of data of attainment levels is time-specific, and comparative intensions need to assess whether enrolment or attainment levels are compared, as the former will not take attrition rates into consideration. There may also be differences in validity depending on whether collection has been made as census or survey (Freeland 2000).

To summarize, the distinction between general and vocational tracks is by the ISCED-classification fairly uniformly defined at levels 2 to 4 with regards to subsequent educational attainment on further levels, although the content will of course vary with greater complexity as the level rises. On level 5, the meaning of general/specific skills takes on a different and more complex form – referring to degrees of specialization captured by length of programme.

The other commonly used classification system is the CASMIN-scheme, most widely used in comparative research on social stratification and mobility. Two main criteria define the category system of CASMIN: i.) a hierarchical differentiation defined by cost, length and quality of educational experience, and the value of the certificate awarded; ii.) the vertical differentiation between general and vocational programmes (Müller et al 1989).

The CASMIN-scheme consists of the following categories:

- 1a.) – Less than compulsory level, no formal certificate.
- 1b.) – Minimum, compulsory general elementary certificate.
- 1c.) – Minimum, compulsory general education plus basic vocational qualification.
- 2a.) – Advanced vocational qualification or intermediate general education plus vocational qualification.
- 2b.) – Intermediate academic or general qualification.
- 2c.) – Full maturity secondary certificate (Abitur, A-levels)
- 3a.) – Lower tertiary certificate (usually vocational)
- 3b.) – Higher tertiary certificate (university degree or above)

The scheme has been developed for and used in quite different research settings than the ISCED scheme; the former being central in research on social stratification and mobility, while the latter has been used most extensively in international statistical reports. It has therefore not surprisingly been noted, twice by Kerckhoff and associates (Kerckhoff & Dylan 1999; Kerckhoff, Ezell & Brown 2002), that the application of the CASMIN and ISCED schemes on national education credentials differ when one compares the classification's correlation with occupational position. The underlying assumption that the indigenous credential system is closely related to corresponding positions in the occupational structure enabled an assessment of which classification scheme best reproduces this correlation through the application of its broader and more general conceptual categories. The results showed that the CASMIN scheme worked better for the Netherlands and Germany, while the ISCED scheme was more accurate for the United States. (Kerckhoff, Ezell & Brown 2002) Although this comparison was made using the older version of the ISCED scheme from 1976, the essential point of such an analysis is important: any development or choice of a conceptual scheme for the more general categorisation of knowledge and skills produced in a country's education system for comparative purposes has to be related to the connections and links to other spheres of society, and more fundamentally to the core aims of research. Since, in particular, the output-subparts of education systems are closely related to the labour market, the institutional structure of this sphere should be a ready focus of attention. This is also, as has been discussed in the review, a quite common approach in research on the degree of specificity of skills and knowledge that school-leavers bring with them to the labour market.

One such classification scheme of occupations' specificity of skills, the ILO:s ISCO88 code - which measures level and specificity of skills, distinguishing between four broad skill levels

which measure scope and complexity of the tasks involved and depend on informal as well as formal training (www.ilo.org; Iversen & Soskice 2001) - can be used for correlation with certificates or qualifications related to various ISCED categories, in order to classify educational system's output of skills. In fact, the broad categories of ISCO were partly operationalized with reference to broad levels of the ISCED classification scheme, although using the old version from 1976. Still, such an approach may involve problems of validity, since it is often concurred that it is necessary to distinguish between the skills that people bring to jobs from the skills that jobs require. (Spenner 1990) Yet, the ISCO-code does also contain a dimension which seeks to capture extent of on-the-job training, and it is expected that the next version of 2008 should relate to the newest ISCED classification scheme.

11. Indicators of standardization

In Allmendinger's study from 1989 the dimension of "standardization" was used to classify national education systems; it referred, roughly, to the extent the quality of education "meets the same standard nationwide" (Allmendinger 1989: 233). The motivation behind such a dimension is quite clear, it seeks to give a measure of uniformity or homogeneity of the context or unit - national education system - of analysis, which is of importance when used for comparison or related to various outcome variables. Now it seems reasonable to distinguish between two kinds of standardization: one which seeks to capture the outer hull, or "signalling" part of various output-indicators, and one which seeks to capture their more substantial quality. The first could implicitly be part of the second, but needn't as well. It would be more concerned with indicators of the organization of qualifications and certificate structure nation-wide, while the latter could use some rough, but common indicators of school quality – expenditure in terms of school budget, teacher's training, students per teacher ratios etc – as well as indicators of degree of centralization in defining school curricula etc. The variety of some composite indices on the standardization dimension could be defined across the relevant sub-regions identified. It should be noted that I have come across very few studies where this dimension is used.

For higher education, at post-secondary and tertiary level, this would today seem to be an important dimension to take into account in any analysis of national education systems, particularly as the expansion and proliferation of these institutions has increased rapidly in the last decade(s) (Erikson 2007). The Bologna-process of European-wide standardization of qualifications and institutional structure of higher education will in this context be of importance (Reinalda & Kulesza 2005), and substantially simplify the former aspect mentioned – "signalling" – as well as simplify cross-national comparisons. Still, it remains to be seen to what extent this process actually standardises the substantial quality of the knowledge and skills produced in higher education institutions. A deeper analysis of the process of implementation will be necessary in order to conduct such an evaluation.

12. Indicators of elementary capabilities

Finally, how could we measure the level of knowledge and skills which would be regarded as expressing the basic capabilities, in Sen's terms, defining the thresholds of social inclusion?

Allmendinger & Leibfried (2003) have proposed that educational poverty may be defined in two ways: either through certificates or through competencies. The latter has in this context most often been represented by *literacy*. There is a large body of research where literacy is measured for reading, mathematics (numeracy) or science subjects. The most widely used study today is the OECD:s PISA study, which assesses the mentioned three literacies internationally for 15-year olds every three years with a specific focus on one of the three in each round (OECD 2006). By the time PISA was first initiated, in nearly all countries respondents were still pupils in the education system until their 16th birthday (Postlethwaite 2004: 63). This would give the study validity for measuring achievement of pupils at the end of compulsory schooling in many countries, and thereby, if we choose that definition, also the level of basic capabilities for these functionings. In fact, the PISA studies have been designed so as to measure “key competencies” achieved among pupils; to monitor “the extent to which students near the end of compulsory schooling have acquired the knowledge and skills essential for full participation in society.” (OECD 2005)

Other influential studies of literacy and numeracy have been conducted by the IEA: the TIMMS from 2003, measuring student achievements in mathematics and science for fourth and eighth graders; and the PIRLS from 2001, measuring student achievement in reading for 9-year olds, are the most recent ones. (www.iea.nl) Yet another study has conducted surveys on adult literacy: the International Adult Literacy Survey from between 1994 and 1998 measured literacy at three scales - prose, document and quantitative - for various categories in the labour force of 22 countries. (www.statcan.ca)

One good example of how such studies can be used to measure ‘low skills’ – which would be equivalent in our language to levels of capabilities around the basic level – is one conducted by Steedman and McIntosh (2001). IALS results in numeracy for adults in the labour force were used for the approximation of ‘low skills’ (the minimum required of most new employees) and compared to TIMMS results of numeracy of pupils at the end of the lower secondary stage, confirming that ISCED-levels 0, 1 and 2 are a good approximation of what it means to have ‘low skills’. That is, this seems to be a promising method of using various tests to translate a level of competence in the labour market to a level of knowledge and skills in the education system.

13. Concluding remarks

Citizenship was conceived already by the ancients. It was re-discovered, fought for, extended and developed through the centuries, and will need to be so also by us moderns, if not late moderns, in the knowledge societies of the global age. The structure of education institutions and their capacity to extend and enhance life chances in line with general principles of social inclusion and equality of opportunity is in this regard of prime importance. As knowledge and skills become even more fundamental for the structuration of opportunities and risks throughout the various stages of an individual’s life course, the quality and access to education institutions should also be given greater attention.

This paper has sought to encircle one relevant field of research which resonates with these concerns. I have here tentatively suggested that this implies studying the quality of education up

until the end of lower secondary (compulsory) education; and quality of knowledge and skills, as well as access, at the subsequent stages at upper secondary through tertiary to further education. Still, prime attention is due to ISCED levels 2 and 3, lower and upper secondary education, and the quality and kinds of knowledge and skills taught here, related to the extent of how well all pupils and students learn these. This is closely tied to our discussion of social inclusion, as we know that it is in these spheres where the thresholds hover for minimum skills in terms of entering the labour market, as well as all the other forms of knowledge necessary for autonomy and participation in society. For (compulsory) lower secondary education, it is crucial to study how well these institutions manage to equip all pupils with the general knowledge which we may term the capabilities for the wide variety of functionings related to education's aim at enabling individuals to lead flourishing lives. For upper secondary education, the vocational aspects become more important – we have indications that lack of attained degree on this level is tied to substantial risks of various forms of social exclusion, particularly from entrance into the labour market. To use technical terms: we should primarily study various institutional input- and process-related dimensions on lower secondary level and seek to understand how these are related to maximum levels and extent of attainment, and primarily dimensions of stratification and standardization on upper secondary level in order to assess its value for vocational preparation. Additionally, these studies can be coupled to the large body of research which studies mobility through the education system, where the assessment of the link between social origins and attainment can often serve as an indicator for normative goals of equality of opportunity.

Amartya Sen's argument has here been employed: we should above all treat education as society's institutions for every citizen's flourishing – more than a productive factor in the economy. We should treat its substance as the development of human capabilities, not solely the development of human capital. Nevertheless, this latter aspect is a subpart of the former in an indirect sense. And even though we should assert that individuals have the right to vocational preparation, while the economy does not have a right to a labour force, these two spheres are bound to one another and can in reality be difficult to separate, as the functioning of the labour market is inherently tied to the production of qualifications and skills in the education system. This has for example, as the review above suggests, been depicted by numerous school-to-work transition studies, and even to the wider institutional configuration of what for example the 'Varieties of Capitalism' approach calls welfare production regimes. What we term the 'quality' of knowledge and skills depend on this institutional context, and we have seen that these differ between countries, and clusters of countries. A starting point for further research may thus consist in the construction of comparable indicators of the degrees of specificity of skills and their coupling with occupations in the labour market, first based on contexts of most like cases guided by previous research, and then extended to wider comparative endeavours. Previous research has lacked in comparative validity since most studies have followed a hypothetic-deductive line of reasoning from qualitative description, without constructing comparable institutional indicators of the national contexts compared. The ISCED-scheme will here serve as a fruitful starting point. For the compulsory levels of the education system, the increasing extent and quality of international studies of numeracy and literacy, such as PISA, will be of great value in studies of how well society manages to furnish every child with knowledge, skills and capabilities for human flourishing.

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