Working Paper 2

THE OECD, INDICATORS AND PISA: AN EXPLORATION OF EVENTS AND THEORETICAL PERSPECTIVES

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Introduction

This Working Paper begins by describing the background and history to the OECD. It then considers in a little more detail the educational work of the Organization and its changing role. A detailed account is then provided of the OECD's Indicators work and its related publication, *Education at a Glance.* This Indicators work utilises data provided by member nations and provides a range of influential comparative statistics. We then look in some detail at the Programme for International Student Assessment (PISA), which has become a major and influential component of the OECD's educational work. This measure of comparative performance of educational systems of member and other nations is based on tests commissioned by OECD. We describe PISA, its management and effects, and then provide three case studies of the impact of PISA in Finland, Germany and the UK. Finally, we conclude with some propositions about how the analysis of the accounts provided of the Indicators and PISA, may be developed and theoretically framed. Here some usage is made of the work of Rose, Foucault and Bourdieu.

The OECD[1]

Background

Founded in 1961, the OECD is an intergovernmental organization (IGO) with policy influence within its member nations, basically rich nations of the Global North, but also with increasing impact on a broader global scale. While the OECD is basically concerned with economic policy, education has taken on increasing importance within the mandate, especially as it has been reframed as central to national economic competitiveness within an economistic human capital framework and linked to an emerging 'knowledge economy'. The OECD has been a central bearer of these ideas and central to the constitution of what Bourdieu (2003)

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[1] The following sections on OECD, the OECD's educational work and *Education at a glance* draw heavily on Henry *et al*. (2001) and Rizvi and Lingard (2006) and acknowledgement is made to the contribution of those colleagues in the thinking and arguments presented.

calls the global economic field, a part of the new scalar politics associated with globalization. Through its education policy work especially in relation to indicators, we would argue, it has also been important to the construction of a global educational policy field (Lingard *et al.*, 2005).

In the context of globalization and enhanced interdependence, intergovernmental organizations (IGOs) have become even more influential in shaping educational policy at the national level; at the same time national governments across the globe also have looked to IGOs to help them construct their strategies for constituting and justifying policies and programs of educational reform. Since the middle of last century, the countries of the Global South have been subject to the dictates of IGOs, such as the World Bank, through accountability demands of structural adjustment attached to loans and aid, and in relation to the World Bank, its role as 'a purveyor of ideas' and as an influential participant in 'the struggle over education policy content' (Jones with Coleman, 2005, p.94). However, over recent years, national governments of developed countries have also seemingly ceded some of their autonomy in public policy development to IGOs in the context of globalization. This has also been an effect of the changing role of IGOs such as the OECD which have real policy salience within the nations of the Global North (Henry *et al.*, 2001). While it remains significant as a think-tank and producer of significant international comparative data, the OECD has taken on an enhanced role as a policy actor, as it seeks for its niche in the post Cold War globalising world of the present and in relation to other IGOs and supranational agencies (Henry *et al.*, 2001).

Against a backdrop of globalization, IGOs, including the OECD, have been central to a number of emergent trends in relation to education policy, which Taylor *et al.* (1997) suggest affect national policy production in education in the following way:

- globalization processes are taken into account in the educational policy priorities at nation state level;

- ideological discourses which frame education policies at the national level are to some extent already globalized;

- political structures, IGOs and the like, operating beyond nations are framing national educational policy options;

- a global policy community in education may be emerging which locates policy processes within and beyond the nation;

- globalization policies are affecting the cultural field within which education operates.

    (Taylor *et al.* 1997, p.61).

For the rich countries of the globe, the OECD plays a pre-eminent policy role in respect of the above scenario, while the OECD itself has also developed alliances with other intergovernmental organizations such as UNESCO, EU, World Bank to actively promote its policy preferences. Jones (2007, p.256), for example, argues that the World Bank adopted OECD policy talk of the knowledge economy as part of its policy ideas from the late 1990s. It is this web of relationships which collectively constitutes the emergent global policy

community in relation to the economy, but also in relation to other domains of public policy, especially education. The case of the OECD is interesting because it does not have the legal instruments nor financial levers to actively promote policy making at the national level within member nations. This is in contrast to say the World Bank which has 'power' over nations of the Global South through policy requirements or trade-offs (structural adjustment) linked to funding and loans. Nonetheless, through its Indicators in Education project, including World Education Indicators developed in conjunction with UNESCO and the World Bank, through the Programme for International Assessment (PISA) and through national and thematic policy reviews, its educational agenda has become significant in framing policy options at the national level, an important reference point for assessment of policy initiatives and program effectiveness at the national level, while also contributing to the constitution of a global policy space in education (Lingard, Rawolle and Taylor 2005). Developing beyond the Taylor *et al.* (1997) observation above, Lingard *et al.* (2005), utilizing the theoretical work of Bourdieu on fields, have argued the emergence of an as yet inchoate global educational policy field, parallelling a global economic field. This is not to suggest a powerless nation state, but rather one which now functions in different ways and which is now located in a web or network of policy relations beyond its national borders. This is part of a new scalar politics related to globalization and new forms of governance (Robertson *et al.*, 2002), the constitution of new spaces of governance, with the EU being perhaps the best case in point. The effect has been 'new production rules' for educational policy development and implementation within nations (Lindblad *et al.*, 2002).This Working Paper will show how a policy as numbers approach adopted to some extent by the OECD (Rose, 1999, Ozga and Lingard, 2007, pp.75ff) has been central to the constitution of the global education policy field.

The OECD: history, structure and changing functions

What then is the OECD, how does it function, what are its purposes, and where does education policy fit within its remit? Henry *et al.* (2001, p.1) note that the OECD has been described as a think tank, a geographic entity, an organizational structure, a policy-making forum, a network of policy makers, researchers and consultants, and a sphere of influence. In formal terms, the OECD describes itself as:

> *...a club of like-minded countries. It is rich, in that OECD countries produce two thirds of the world's goods and services, but it is not an exclusive club. Essentially, membership is limited only by a country's commitment to a market economy and a pluralistic democracy. (OECD 1997)*

In the post Cold war era, of course, many more nations meet these two membership criteria. At the same time, the contexts of globalization and end of the Cold War have provoked questions for the OECD itself about its specific role. How does it fit with, complement, define itself in relation to other international intergovernmental agencies from the supranational EU to the UN, UNESCO and through to the World Bank and WTO? And, of course, we need to recognise the different institutional status and *modus operandi* of these agencies.

The significance of these identity and function pressures becomes apparent when one considers the origins of the Organization. The OECD was formally established in 1961 and evolved from the Organization for European Economic Cooperation (OEEC), funded under the Marshall Plan by the USA for the economic reconstruction of Europe in the context of the Cold War. An economic focus has always been paramount with education considered in relation to the economy. Papadopoulos (1994) in his institutional history of the OECD and education states that education always had an 'inferred role' in respect of its economic significance. As will be shown, this inferred role has become more explicit in the context of post Cold war globalization and emergent knowledge economy. The end of the Cold War and the apparent triumph of global capitalism has placed pressures on the purposes of the OECD and changed its remit in some ways.

Specifically, the OECD states that its contemporary mission is to:

- Achieve sustainable economic growth and employment and rising standards of living in member countries while maintaining financial stability, so contributing to the development of the world economy;

- Assist sound economic expansion in member countries and other countries in the process of economic development;

- Contribute to growth in world trade on a multilateral, non-discriminatory basis.

In this mission statement we can clearly see the economic focus of the Organisation, its global reach and coded support for neo-liberal approaches.

The OECD has remained a USA-backed (and influenced) institution – they still contribute approximately twenty-five per cent of the Organization's budget. However, Henry *et al.* (2001) argue that throughout its history there has been an ongoing tension between US market liberalism and more European social democratic traditions, perhaps redolent of more contemporary tensions between say the market liberalism of England and the social models framed by social democracy of continental Europe, 'Old Europe' in contemporary US 'neo-con' speak. To some extent and in the context of globalisation, US market liberalism in the guise of neo-liberalism has won out in the policy regimes of the contemporary OECD, but always framed by complementary concerns for equity, inclusion and social cohesion.

US interventions in key appointments and work plans have also been resisted from time to time. For example, in relation to education, Henry *et al.* (2001, Ch 4) demonstrate that it was largely at the insistence of the US and against considerable internal opposition that the then controversial project on educational indicators (INES) was initiated in the mid 1980s. The taken-for-grantedness of this world of educational indicators today, despite all riders for contextual care in reading them (eg McGaw, 2000, Novoa and Yariv-Mashal, 2003), is indicative of the way in which they have become an accepted part of the contemporary educational policy lexicon across the globe, within the OECD itself and within member nations and well beyond, and of how their place has changed in the educational work of the OECD since the 1980s. (PISA now accounts for approximately 30% of the Education Directorate's budget inside the OECD and is funded directly by participating nations.) Think

here, for example, of PISA and the way in which Finland has become a significant 'reference society' for many national educational systems across the globe and how Finland itself, while not being framed nationally by a policy as numbers approach nor by what might be classified as the Anglo-American approach to educational and school reform, has been lauded in terms of global educational indicators. Think for example of the impact of poor PISA performance on educational policy development within reunified Germany. These are matters we will return to later in this Working Paper.

Haas's description (1990, p. 159) of the founding of the OECD as 'a rather incoherent compromise between the United States and the European members' thus remains apposite, as does his observation that most international organizations have their own superpower 'capable of playing a hegemonic role if it chose to do so' (p. 57). Henry *et al.* (2001) argue that the US played such a role in respect of the creation of the INES (Indicators) project.

As already noted, the OECD's capacity to dictate to its members is limited, because unlike many other international agencies, the OECD has no prescriptive mandate over its member countries. Power relations between other IGOs and the nations of the Global South are much more asymmetrical in character, than those between the OECD and its member nations, even though the OECD also has enhanced relations with the so-called economies in transition of the post Cold war era, or Non-member Economies as the OECD refers to them. Indeed, the OECD in its own documentation suggests that it has 'active relationships' with 70 countries in addition to its 30 member nations. THE EU also has a very different relationship to its member nations than does the OECD because of its different legal and political character.

The OECD itself argues that operates through 'consensus building' and through 'peer pressure' and as Lukes' (2005) account of power has suggested, hegemony is more effective than naked force. It is proud of the 'traditions of transparency: of providing explanations and justifications for policy, and of engaging in critical self-appraisal' (OECD 1998a, p. 102). As Henry *et al.* (2001) note, 'Its cachet is linked to its elevation above the machinations of national politics' (p.160). The OECD hence seeks to exert influence through processes of 'mutual examination by governments, multilateral surveillance and peer pressure to conform or reform'. This is achieved through an elaborate system of directorates, committees and boards, at the apex of which is a Council comprising representatives from each member country, normally at ambassadorial or ministerial levels. In this way, the OECD asserts its agenda in rather informal ways though the processes of opinion formation and coordination, in a manner that is dynamic and constantly shifting.

In the context of the US market liberal and social Europe tension referred to above, Rizvi and Lingard (2006) have argued that neo-liberal precepts of the economy have triumphed within the OECD over the last decade or so. Specifically, they observe:

> *Ideological debates have thus been replaced with technical questions of how to promote trade and monitor neo-liberal reforms in the entire range of the OECD's policy concerns from industrial relations and infrastructure to immigration and education. It thus appears to be the case that, while some ideological tensions remain, the framework of much of the OECD's*

policy work has shifted decidedly towards the US neo-liberal model. (Rizvi and Lingard, 2006, p.249)

Furthermore, they also argue that the OECD has become a more significant policy player, noting that the OECD has used the concept of 'globalization' discursively to great effect. As they show, the OECD speaks consistently of 'the imperatives of globalization'. This is Bourdieu's (2003) point about the performative usage of globalization to elide other meanings than neo-liberal market economics. These imperatives are linked to neo-liberal economic policies which give an important place to education as human capital development and as significant to the emerging knowledge economy within rich member nations.

In arguing this case, Rizvi and Lingard (2006) are drawing on earlier research conducted with Miriam Henry and Sandra Taylor (Henry *et al.*, 2001), where the argument was sustained that, while the OECD remains a think-tank, a policy-making forum, a network of policy makers, researchers and consultants, and a sphere of influence functioning through suasion, it has now become more of a policy actor in its own right. That study was explicitly concerned to ascertain how the OECD had articulated, responded to and been affected by the processes of globalization (Henry *et al.*, 2001, p.157). The argument is that the OECD has moved from a think-tank role to a problem solver role, and thus become more of a policy actor in its own right. Yet, as Henry *et al.* (2001, p.174) suggest, 'The OECD is not a singular entity'. They add: 'Rather, it exists in a complex relationship with its members being simultaneously policy instrument, forum and actor'. However, it is the role as policy actor which has strengthened over the recent past, in the context of globalization, and been a central factor in the new scalar politics, which have seen the emergence of a global economic policy field and new forms of governance. Further, its policy reach has extended beyond its member nations through its work with 'non-member economies' and its contribution to global economic policy discourses, which frame educational policy in explicit human capital ways. The OECD's Directorate for Education, for example, has a Unit for Co-operation with Non-member Economies (NME).

The OECD's educational work

To this point we have noted that the OECD is an organization concerned primarily with economic policy. Historically, the OECD's interest in education has been clearly linked to its overall economic objectives. It was only in 2002 that Education became a separate and permanent Directorate within the OECD, until then it had less certain institutional status, gaining a mandate every five years from the Council of the Organisation. In its original charter there was no independent structural location for education, only the inferred role noted earlier (Papadopoulos 1994, p.11). Initially, this inferred role was conceived in terms of boosting scientific and technological personnel capacity and improving and expanding science and mathematics education in school (in the context of the space race and Cold War). Education-related activities were carried out initially under the rubric of the Office for Scientific and Technical Personnel, which in turn grew out of the former OEEC's pivotal work in mapping the technological gap between Europe and North America in the context of the

Cold War (Papadopoulos 1994). There is again now in the OECD's work a focus on these capacities, but in a post Cold War world and in relation to the knowledge economy, with knowledge and research now seen as central to production processes.

In 1968 the Centre for Research and Innovation (CERI) was established within the OECD, partly as a result of a growing recognition within the Organization of the 'qualitative' aspects of economic growth 'as an instrument for creating better conditions of life' and, along with that, of a more comprehensive view of education's multiple purposes. By the early 1970s, then, the Organization had come to the realization that 'the full range of objectives of education had to be taken into account if the educational activities of the Organization were to make their rightful contribution to economic policy' (Papadopoulos 1994, p.64). According to Papadopoulos (1994, p. 122), this marked the triumph of a more comprehensive, less economistic or human capital, view of education policy within the OECD, which possibly gave more importance to education's social and cultural purposes. Papadopoulos (1994) also shows that a (European) network of progressive sociologists of education was important to the emergence of this policy framing of education. This framing was apparent in the educational work the OECD pursued, organised under four programmes: two of them emerging from the Education Committee and the CERI Governing Board, with the other two being the more specialist programmes of Educational Buildings (PEB) and Institutional Management in Higher Education (IMHE). As Rizvi and Lingard (2001, p.250) illustrate, the educational projects sponsored by the OECD during the 1970s and 1980s demonstrate the significance of social justice purposes of education and a complex and mediated relationship between education and economic development.

Rizvi and Lingard go on to make two points about these educational programs.

> *First, the programs were largely supportive of national agendas, brought to the OECD by the member countries. They pointed to an organizational politics characterized essentially by consensual processes of decision-making in which nation-states retained a great deal of power in defining the ways they wished to use the resources of the OECD. The OECD responded to national priorities and did not wish its own perspective imposed upon them. Second, these programs indicated the OECD to be a broad ideological church respectful of the diversity of ideological positions. (Rizvi and Lingard, 2006, p.250)*

> *Drawing on the institutional history of Papadopoulos (1994), they note his stress that the OECD at the time could not be viewed as an 'homogeneous unit with a narrow, static agenda', but that there were differences and ideological contestations across the Organization, in relation to both its economic and social policy agendas. Papadopoulos (1994) argues that until the late 1980s and early 1990s the social justice or equity emphasis won out in the education agendas of the OECD. However, Rizvi and Lingard (2001) argue that since that time the social efficiency agenda has usurped the equity one as evident in its programmes of work and policy reports. Further, when combined with the role of the OECD as more of a policy actor, this has seen changes in the focus of the Directorate's education work.*

This new policy emphasis in education and role for the OECD in education was most evident when the OECD established a separate Directorate for Education in 2002. This was indicative of the significance of education within economic policy agendas in the context of globalization. In relation to the new Directorate, the secretary-general of the OECD stressed that 'education is a priority for OECD Member countries and the OECD is playing an increasingly important role in this field. Society's most important investment is in the education of its people'. He also pointed out the importance of comparative indicators to this agenda and to the work of the OECD. The OECD's own website description of its education work, states:

> *The development of modern knowledge economies has increased the importance of education policy. Expanding participation beyond schooling in tertiary education and other forms of education and training has sharpened debates about the nature and mix of programmes and the bases for their funding. It has also increased the demands for efficiency and effectiveness in the use of resources. (p.4)*

It is then noted that the OECD's education work is 'located centrally in these debates' (p.4). Next it is stated that OECD's 'work on education statistics and indicators provides a strong base for international comparisons of all aspects of education systems'. We would suggest that this aspect of its education work has become paramount.

The Education Directorate is governed by five bodies, each of which has its own budget and mandate. The statistics and indicators work referred to above is governed by a joint session of the Education Committee and the Governing Board of the Centre for Educational Research and Innovation (CERI). The work of the Education Committee is funded through the core budget, while that of CERI is funded by participating nations and organisations. This is also the case for the Programme for International Student Assessment (PISA), whose work is overseen by a Governing Board, consisting of participating nations. The actual work on PISA and the Directorate's other indicators work is undertaken by the Indicators and Analysis Division, with Andreas Schleicher as its Head. Within the Directorate of Education, work is carried out in seven areas. These are: Education and Training Policy (ETP), Centre for Educational Research and Innovation (CERI), Indicators of Education Systems (INES), Programme for International Student Assessment (PISA), Programme on Institutional Management in Higher Education (IMHE), Programme on Educational Building (PEB), and Unit for Co-operation with Non-Member Economies (NME). The work in these seven areas is framed and shaped by the Strategic Objectives of the Education Directorate, which are developed from the concerns of the chief executive officers of the education ministries of the member nations.

We have then outlined the nature and structure of the OECD's education work carried out by the Education Directorate. More analytically, we have also noted the central tension at the heart of the OECD's educational policy work between the economic and cultural ends of education, or what Rizvi and Lingard (2006) refer to as the tension between the promotion of social equity on the one hand and social efficiency on the other. They argue that over the past decade or so, the OECD agenda in education has become increasingly focused on social efficiency. This is evident, they argue (p.250) in its support and promotion of a

particular economistic view of educational aims linked to the requirements of a global knowledge economy and ideas about educational governance linked to new public management, which increasingly promote corporatized and privatised administration of education, outcome measures and knowledge as commodity. Social justice and equity have remained on the OECD educational policy agenda, but have been 'rearticulated away from a strong definition of social justice towards social capital and social inclusion concerns' (Rizvi and Lingard, 2006, p.250). However, the argument of this Working Paper is that perhaps the greatest impact of the contemporary educational policy agenda of the OECD has been in relation to its Indicators agenda, including PISA, and their contribution to the construction of a global educational policy field constituted through numbers, a manifestation of a new scalar level of governance, particularly when considered in relation to the complex web of intergovernmental agencies, including the supranational EU. This is linked to the OECD's role in promoting a particular education policy regime in the context of globalization, the global educational policy discourse referred to earlier as developed by Taylor *et al.* (1997). The indicators work, especially PISA, has manifested a policy as numbers approach and contributed to a new form of governance within member nations, namely 'governing by numbers' (Ozga and Lingard, 2007, Novoa and Yariv-Mashal, 2003). This is linked to the new educational policy consensus in education.

Brown and his colleagues define this new educational policy consensus in the context of globalization, and to which the OECD's education work has contributed, in the following fashion:

> *The new consensus is based on the idea that as the 'walled' economies in mid-century have given way to an increasingly global economy, the power of national government to control the outcome of economic competition has been weakened… Indeed the competitive advantage of nations is frequently redefined in terms of the quality of national education and training systems judged according to international standards. (Brown et al., 1997, pp.7-8)*

The OECD has been important in the emergence of the global economy, certainly in pushing *the idea* of a global economy, as well of a neo-liberal policy approach. The education work of the OECD has become more important, as education policy is seen as central to the competitive advantage of putative national economies in the face of globalization. Further, evaluations of national education and training systems require international points of comparisons. The OECD has filled this niche in relation to education policy in terms of its indicators work generally and specifically, PISA. Taken together, these factors account for the increased significance of the education work of the OECD, its contribution to the emergent global education policy field, and its enhanced role as policy actor.

Education at a Glance: OECD Indicators[2]

The monitoring of progress and experimentation in systems of education depends heavily on indicators that enable government authorities and other interested groups to judge the context and functioning of education and the results achieved. Education indicators can reveal some of the most critical weaknesses of education systems, and can aid the design of corrective policy. (CERI, 1993, p. 10)

International comparisons of educational conditions and performance are now perceived as a means of adding depth and perspective to the analysis of national situations. References to other nations' policies and results are beginning to be routinely used in discussions of education, and comparability now belongs with accountability to that changing set of driving words which shape the current management paradigm of education. (Alexander, 1994, p. 17)

Over the past decade or so, indicators have become a highly significant part of the OECD's work in education. Its now annual publication *Education at a Glance: OECD Indicators* is disseminated widely not only across the OECD countries, but elsewhere as well, just as participation in PISA now involves a large number of countries in addition to OECD member nations. In addition, since 1996 this publication has been supplemented by an analytical volume which draws on the database to comment in more detail on selected themes deemed to be of key importance to governments, policy makers and the public. The first volume of *Education at a Glance* was published in 1992, with the purpose of providing an insight into the comparative functioning of the education systems of member countries. Its thirty-six key indicators provided information around three areas of interest: the demographic, economic and social context of education; costs, resources and school processes; and outcomes of education. Subsequent volumes continued to provide data that reflected both on the resources invested in education as well as on its returns, illuminating 'the relative qualities of education systems' (CERI, 1996a, p. 9). By 1998, the original categories had been reorganised and expanded around six themes: the demographic, economic and social context of education; financial and human resources invested in education; access to education, participation and progression; the transition from school to work; the learning environment and the organisation of schools; and student achievement and the social and labour-market outcomes of education.

The OECD argues that this exercise in international comparison is designed to assist in the processes of policy formation in member countries and to contribute to the public accountability of education systems:

At a time when education is receiving increased priority but, like other areas of public spending, is facing the prospect of limited public funds, understanding better the internal processes that determine the relationship between educational expenditures and educational outcomes is particularly important. (CERI, 1995b, p. 7)

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[2] This section of the paper has been derived very heavily from Ch 5, 'The Politics of Educational Indicators' from Miriam Henry, Bob Lingard, Fazal Rizvi and Sandra Taylor's (2001) book, *The OECD, Globalisation and Education Policy*, Oxford, Pergamon, pp.83-105. The Indicators project is situated against changes in state formation and related policy developments associated with globalisation in Ch 2 of that book, 'Globalisation and Changing Educational Policy', pp.19-37.

This efficiency and effectiveness perspective provides a somewhat under-stated view of the purposes and significance of the OECD's work on indicators; that this work not only provides relevant comparative information to member countries, but also helps shape their policy agendas and priorities and contributes in some ways to a degree of policy convergence across the globe. Thus our interest here is not so much in the details of the indicators as in their overall significance. We are arguing that there is a broader politics of change associated with the Indicators project, based as it is on a particular view about the policy directions and approaches needed to reform education. In this way, we suggest, the INES project plays a normative and legitimation role in the promotion of what could be called a global ideology of educational management and change linked to broader public sector reform across member countries. This 'new public management' or 'corporate managerialist' approach to public sector administration has been called 'steering at a distance' through the setting of strategic objectives and the measurement of success through a raft of performance indicators. The OECD has been an important bearer of the ideology of new public management, while its indicators contribute to steering at a distance and governing by numbers within nations.

> As argued by Henry et al. (2001), the Indicators project also provides a useful illustration of the shift in the OECD's role as a policy instrument and forum - that is, as a catalyst facilitating policy development in member countries and assisting processes of policy dissemination, adaptation and borrowing - to that of an international mediator of knowledge and global policy actor. This, in turn, has contributed to the global education policy field. These 'faces' of the OECD are not mutually exclusive, of course, because the indicators work at two levels. At one level, indicators may indeed assist member countries to clarify and compare their own policy stances and also in relation to PISA allow some focus on matters of equity; simultaneously, though, international indicators draw countries into a single comparative field which pivots around certain norms of provision and performance.

A brief excursion into the history of OECD illustrates the changing attitude to performance indicators within that organisation. Throughout the 1970s and 1980s, amid continuing ideological and philosophical debates about the nature and applicability of performance indicators to education, the OECD, and CERI in particular, explored issues of educational reform, social equity and innovation in terms that were more conceptual and philosophical than evaluative and statistical. This was the time of equity taking priority over efficiency. Within CERI, a culture of distrust towards performance indicators had developed over the years. By the mid-1980s, however, even CERI could not easily dismiss the pressures for a new effort to develop indicators. At the present time, indicators have been useful to CERI's future scenarios work in respect of schooling and more recently in relation to tertiary education. Henry *et al.* (2001), drawing on interview data, show how the US, in particular, repeatedly called for work on outcomes indicators, particularly in relation to school effectiveness, at one stage threatening to withdraw its support from CERI if its demands were not met. However, Henry *et al.* (2001) also demonstrate that, from a different ideological direction, France - with its bureaucratic interest in statistical data collection - joined with the US in pushing the OECD towards the direction of developing educational indicators. With both the US and France, there was also probably a republican tradition (and

possibly a bureaucratic one in France as well) of numbers used for progressive policy purposes, somewhat akin to a 'political arithmetic' tradition within British sociology and social administration.

In a Presidential address to the Comparative and International Society, Heyneman (1993, p. 375) describes a visit he had made to the OECD in Paris in 1984 following an acrimonious meeting of the board of directors of CERI. At that meeting:

> *The US delegate was said to have put a great deal of pressure, and in very direct language, for OECD to engage itself in a project collecting and analyzing statistical education 'inputs and outcomes' - information on curricular standards, costs and sources of finance, learning achievements on common subject matter, employment trends and the like. The reaction among the staff of CERI was one of shock, and deep suspicion. Those whom I interviewed believed it was unprofessional to try and quantify such indicators, and that it would oversimplify and misrepresent OECD systems, and that it would be rejected by the twenty-four member states whose common interests they were charged to serve.*

However, such was the strength of the United States' convictions that CERI had no other choice but to concede. It bowed not only to internal pressures within the OECD, but also to the popularity of the accountability movements in several member countries at the time, where decision makers had for some time been calling for comparative data to assess and monitor the effectiveness of their education systems. Papadopoulos (1994) comments: 'It seemed therefore logical to add an international dimension to these national efforts, even though the difficulties, both conceptual and technical were fully recognised from the outset'. Moreover, because of the considerable groundwork which had been done, the OECD was 'well placed to respond to the mounting pressure in the late eighties for a new governmental effort to develop such indicators' (1994, p. 190). Thus by the early nineties, as Heyneman went on to observe, the doubters had been won over and the Indicators project had become fully established within the OECD's educational work-reflective, he argued, of a burgeoning 'new industry of comparative education' (Heyneman, 1993, p. 378). However, as Novoa and Yariv-Mashal (2003) persuasively demonstrate this was new thinned out version of comparative education reincarnated as a form of governance.

In September 1991, the second phase of the INES project culminated in a major meeting at Lugarno where the first draft edition of *Education at a Glance* was presented. It contained data on thirty indicators which ranged from relatively traditional items such as participation rates, to complex and contested measures such as characteristics of decision-making within the system. This meeting also launched *Making Education Count* (CERI, 1994b), a publication addressing a range of conceptual issues and revealing the extent to which many matters of definition, bias and validity of comparison and inference remained unresolved. So, for example, it remained unclear how comparative data should be applied in measuring the relative progress a system might have made with respect to particular objectives. The question of relative weighting that a system might attach to particular indicators within its framework of priorities also was unresolved.

Organisationally, a Policy Review and Advisory Group was established to work closely with the secretariat to establish a stronger anchor for the work in policy considerations, and a

group of national coordinators was appointed to consult with the secretariat in the oversight of the operational aspects of INES, and to 'contribute to the diffusion of an indicator culture within education circles' (OECD/CERI, 1995, p. 4). This is one significant way how the OECD works, through suasion and diffusion, through discursively constructing the parameters for policy possibilities and discussion. This is significant in relation to the Henry *et al.*(2001) thesis of the OECD becoming more of a policy actor during this time. Also significant was the integration of the various statistical activities in education under a new division within DEELSA, the Statistics and Indicators Division. When Education became a separate Directorate within the OECD in 2002, an Education Indicators and Analysis Division was established, which now manages INES and PISA. The thinking behind this move was to put together the resources of the Education Division and CERI, but more significantly and symbolically, the move represented the mainstreaming of the OECD's indicators work in education, from developmental status to its status as a core activity of the Organisation. It was at this point, too, that the project was put under the direction of a 'new guard' of statisticians, finalising its move away from its philosophical starting point to a more technical, operational one. It is these high level capacities which have enhanced the OECD's Indicators and PISA work.

The success of the project meant that resources were increased to improve and expand the indicators, though the major part of the resourcing came from member countries themselves through the funding of the various networks, each sustaining at least three or four full-time staff. In 1996, *Education at a Glance* was accompanied by a shorter analytical volume, *Education at a Glance - Analysis*, which discussed 'some of the key themes emerging from the data and the lessons the results carry for education systems' (CERI 1996b). Subsequently, the *Analysis* was released at a different time from *Education at a Glance*, reflecting 'the continuing development of two distinctive but highly complementary publications' (CERI, 1998b, p. 6). In 1997 and reflective, perhaps, of the status of the project, the secretariat was requested by the OECD Council to commence exploratory work on the development of comparative indicators of human capital investment. Henry *et al.* (2001) quote an interview with a person in the secretariat stating that, this would

> *... be the first step in developing an international set of indicators to answer the interests of policy makers and, I suppose, people in education and employment ministries. People are under pressure to justify their expenditure so they want data to show that education and training outpays investments rather than consumption activities. (IT 8: secretariat, 1997)*

Interest in education indicators is of course not restricted to the OECD and its member countries. Other inter-governmental organisations such as UNESCO and the Asian Pacific Economic Cooperation forum (APEC) have pursued similar agendas - indeed, the OECD and UNESCO's work on indicators was acknowledged as a context for APEC's interest in developing indicators of school effectiveness (APEC, 1997, p. 4). In 1995 UNESCO, OECD and EUROSTAT (the statistical wing of the EU) joined forces in jointly collecting data on key aspects of education, thus consolidating a liaison formed when the OECD adapted the International Standard Classification of Education (ISCED) Systems originally developed by UNESCO, in turn based on the OECD's earlier developmental work (Papadopoulos, 1994,

pp. 53-54). This collaboration, though fraught with difficulties as suggested by Henry *et al.* (2001), explored common definitions, use of criteria for quality control and improved data documentation in order to improve the international comparisons of education statistics. Reflective of this expanded terrain, the 1998 edition of *Education at a Glance* included data from a wide range of non-member countries through the 'World Education Indicators Programme' (WEI) conducted in collaboration with UNESCO and partially funded by the World Bank. World Indicators identified differing outcomes between OECD and WEI countries around matters such as student demography, levels of educational attainment, graduation rates and resourcing per student (CERI, 1998a, pp. 29-30). By 1998, then, in the OECD's own words, indicators were covering, 'almost two-thirds of the world population' (CERI, 1998a, p. 6).

The 1990s then saw some remarkable shifts in the development of educational indicators within the OECD: from philosophical doubt to statistical confidence; from covering some countries to covering most of the world; from a focus on inputs to a focus on outputs; and from occupying an experimental status to being a central part of the Organisation's educational work.

More recently consideration has been given to linking the indicators used by OECD with outcomes measures of performance such as those of PISA, to a consideration of which we now turn.

The Programme for International Student Assessment (PISA): Leaning tower or solid measurement construct?

The Programme for International Student Assessment (PISA) is conducted in three-yearly cycles and examines the knowledge and skills of 15-year-olds in compulsory education. The OECD develops the assessment tasks used in PISA through commissioning agencies to produce the tests. Thus, unlike the Indicators which are reported in *Education at a Glance* and which utilise data supplied by member nations, PISA actually works with OECD 'developed' and 'mandated' tests. Although PISA began as a joint survey of the OECD member countries, it has developed its scope to involve non-member countries as well. Indeed, since the year 2000, when the first PISA survey was conducted, more and more countries have been taking part, with the latest PISA (2006) having assessed students in 57 countries all over the world, thus involving 27 non-member participant nations. The international dimension of the survey, which overrides the boundaries of Europe to compare student performance of countries as diverse as the US, Greece and Indonesia, gives PISA a particularly significant weight in terms of interpreting and analysing the processes of educational policy and governance at a national and an international, even global level (Rizvi and Lingard, 2006).

However, before discussing their impact, one has to consider the *purposes* of establishing performance measurement tools of this kind; the inter- and supra-national dimension of such data 'crunching' systems tends to justify their existence by the sheer magnitude and scope of the project itself. We would argue the OECD itself has been significant in selling the

OECD's capacity to do such work. In the context of globalization and apparent policy acceptance across the globe of the need for such international comparative data, the OECD is now seen as the most significant organisation to do such work. Questions such as the reasons behind attempting such costly exercises, the policy actors that move their threads, the discourse and logic that shape them, have not yet been the focus of systematic interpretation and analysis. Even though such a discussion is well beyond the scope of this Working Paper, the more humble purpose of this section is to examine PISA as OECD's platform for policy construction, mediation and diffusion at a national, international and possibly global level. In other words, rather than simply an evaluative assessment exercise, we address these questions: has PISA been constructed into a normative prescription about the future direction of education systems? What are its policy effects? How does PISA produce evidence-based policy orientations, what are their main features and how have they been influencing national education systems? What is the relationship of PISA with the work of other intergovernmental (European) organisations, such as the Eurostat or Eurydice? How can PISA be compared with other similar assessment exercises, such as TIMMS and PIRLS, delivered by the International Association for the Evaluation of Educational Achievement (IEA)? Rizvi and Lingard maintain:

> *The OECD does not use a language of exploration of policy options to which it is committed, but acts instead as a strong advocate for these reforms; not as a facilitator of political debates among member countries, but as a political actor in its own right. It highlights the relevance of these governance principles for all its member countries, regardless of their local histories and traditions, and for the entire public sector, including education. In the process of implementation, educational systems thus lose their sui generis character. As a consequence, the organisational structures and basic practices look similar now in educational, health, welfare and other public-sector bureaucracies (2006, p. 255).*

The inclusion of non-member countries in the assessments is indicative of the global influence the PISA results have not only in the developed but also the developing world. They do not only occupy media headlines, they shape policy and sometimes even lead to urgent reforms:

> *Such researches produce a set of conclusions, definitions of 'good' or 'bad' educational systems, and required solutions. Moreover, the mass media are keen to diffuse the results of these studies, in such a manner that reinforces a need for urgent decisions, following lines of action that seem undisputed and uncontested, largely due to the fact that they have been internationally asserted (Nóvoa and Yariv-Mashal, 2003; 425).*

PISA has been conducted three times so far: in 2000, 2003 and 2006. While always focusing on literacy, maths literacy and scientific literacy, the survey has a particular focus each time; in 2000, PISA focused on students' reading skills, whereas in the years 2003 and 2006, the focus was on mathematics and science respectively. Its innovative dimension lies in the fact that, rather than examining students' mastery of the school curricula, the focus is on an assessment of young people's ability to practically apply their skills in everyday life situations. The extent to which PISA has been successfully able to devise questions that apply to the everyday cultural contexts of 15 year olds from Hungary to China and from

Canada to Uruguay has been disputed (Prais, 2003) — but we will return to this later. There is also in addition to the possibility of culture fair test, the issue of translation into varying languages for usage. The focus on 'real-life' circumstances and on students' capacity to enter the labour market with core skills, such as literacy and numeracy, has taken PISA's focus of interest away from older educational values which arguably cannot be so readily measured (i.e. democratic participation, artistic talents, understanding of politics, history etc), towards a more pragmatic view of valuing education's worth; according to PISA, it is 'its relevance to lifelong learning' (OECD, 2003), that is one of its key features and lifelong learning is a key policy theme of the OECD. Indeed, PISA has been one of the first international student assessment surveys that, even though it examines pupils who are still at a school level, applies concepts such as 'literacy', previously connected only with adult learners. According to OECD (2003), PISA has an

> *...innovative approach to lifelong learning, which does not limit PISA to assessing students' curricular and cross-curricular competencies but also asks them to report on their own motivation to learn, their beliefs about themselves and their learning strategies (OECD, 2003; no page numbers).*

Finally, and perhaps most significantly, according to the same document, a key feature of PISA is

> *...its policy orientation, with design and reporting methods determined by the need of governments to draw policy lessons. (OECD, 2003; no page numbers)*

Indeed, since 2000, the 'PISA-effect' has been significant in participating educational systems across the world. We examine this effect or the impact of PISA on three European countries later in this Working Paper, Finland, Germany and the UK. Finland, having done exceptionally well in PISA 2000 and PISA 2003, is still basking in the glory of these positive results. Germany, in contrast, was led to urgent educational reforms and a feeling of disillusionment because of its poor performance. Finally, the UK case will be examined and some consideration will be given to differences between Scotland and England on PISA, while acknowledging that for the OECD the UK is considered as one nation. Are there differences in the ways PISA results were interpreted at the level of the different national cases within the UK and particularly at the Scottish and English context? Before looking at these specific cases, we will briefly describe the PISA background and organisation and give an overview of what the three surveys of the last six years involved.

PISA: the background

The idea of an international comparative assessment of student performance was not new to OECD work when PISA was first conceptualised. In fact, OECD's 'Green Book' throughout the '70s was one of the first efforts to establish a model of gathering and comparing educational statistics (Papadopoulos, 1994). However, it was not until the mid-1980s when the measurement of indicators of educational success was to become one of the areas of primary interest for OECD: as already discussed, the establishment of the 'International Indicators of Educational Systems' (INES) project was one of the first

organised attempts to standardise and compare educational statistics at an international scale (Martens *et al.*, 2004). Indeed, PISA represents the developed and more sophisticated version of the work which INES began, with the important distinction between PISA and other indicators being the fact that PISA generates its own data, rather than relying on already extant national data as with *Education at a Glance*.

PISA has its roots in those first attempts to establish frameworks of international comparison, even though there was some initial internal resistance against them (Martens *et al.*, 2004, Henry *et al.*, 2001). In addition to *Education at a glance* annual reports, which mostly cover the investment of human and financial resources in education, the operation of educational systems and the individual, economic and social returns from investing in education, PISA aimed to establish regular and reliable international measures of students' educational outcomes, especially those that measure skills. Today, PISA is conducted in a relatively devolved manner, since data is gathered separately at each one of the national centres. There are only four people at the headquarters of OECD in Paris that manage its collection and processing (Martens *et al.*, 2004). Nonetheless, even though most of the statistical work is conducted by the OECD member and non-member countries, it is the OECD staff members who decide on the frameworks of questions and orientations that the survey applies. These are decided in collaboration with experts, practitioners and politicians —or internally, as the incident with the American delegates showed (Henry *et al.*, 2001).

According to Martens et. al. (2004), the idea of the PISA project was presented to the member countries as early as 1995. Five years of deliberations and piloting of the project resulted in an agreement on the framework of the survey. Within the framework of the OECD, the design and implementation of PISA is the responsibility of an international consortium led by the Australian Council for Educational Research (ACER). This consortium is commissioned on behalf of OECD. Other partners in the Consortium include the National Institute for Educational Measurement (CITO) in the Netherlands, Westat and the Educational Testing Service (ETS) in the United States, and the National Institute for Educational Policy Research (NIER) in Japan. In PISA 2000, the Consortium implemented PISA within a framework established by a Board of Participating Countries (BPC) which includes representation from all countries at senior policy levels. In PISA 2003 BPC WAS replaced by the PISA Governing Board (PGB), 'which includes representation from all countries at senior policy levels' (OECD, 2005, p.10), Both BPC in 2000 and PGB in 2003 established policy priorities and standards for developing indicators, for establishing assessment instruments, and for reporting results. According to the PISA 2000 Technical Report (OECD 2002):

Experts[3] from participating countries served on working groups linking the programme policy objectives with the best internationally available technical expertise in the three assessment areas. These expert groups were referred to as Functional Expert Groups (FEGs). By participating in these expert groups and regularly reviewing outcomes of the groups' meetings, countries ensured that the instruments were internationally valid and that they took into account the cultural and educational contexts of the different OECD Member Countries, that the assessment materials had strong measurement potential, and that the instruments emphasised authenticity and educational validity (OECD, 2002, p.17, our emphasis).

National Project Managers (NPMs) implement PISA at the national level of each participating country. They have the role of developing and validating the data collection, through verification and evaluation of the survey results, analyses and reports (OECD, 2005).

Finally, the OECD Secretariat has the general responsibility and management of the programme and acted as the interlocutor between the Consortium and the PGB.

Based on OECD's report *Measuring Student Knowledge and Skills - A new Framework for Assessment* (1999), participating countries and the international consortium developed test items which were then reviewed by subject matter specialists and assessment experts. Assessment items were trialled twice on a sample of students. In PISA 2000, reading literacy items were submitted by ACER (37 questions), CITO (16), Finland (12), Denmark (2), Belgium (8), Sweden (6), New Zealand (9), USA (7), France (10), Greece (3) and Switzerland (5), whereas a large number of questions (23) were derived from the International Adult Literacy Survey (IALS). Translation issues were considered and items were sent to participating countries for reviewing purposes; items were reviewed according to i) students' exposure to the content of the item, ii) item difficulty, iii) cultural concerns , iv) other bias concerns, v) translation problems and vi) an overall priority rating for inclusion of the item. After a series of meetings throughout 1999 of all FEGs and the Cultural Review Panel, the specific set of test items that would be administered for PISA 2000[4] was decided upon. This was the attempt to ensure culture fair tests as the basis for international comparisons of student outcomes[5]. The apparent detachment of the skills and aptitudes

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[3] PISA 2000: From the UK, Alan Davies (University of Edinburgh) was in the Reading Expert Group, Wynne Harlen (University of Bristol) was Chair of the Science Functional Group and David Bartram (SHL Group plc – a people performance management company [i.e. phychometric testing etc], until 1998 David Bartram was professor of psychology at the University of Hull) in the Cultural Review Panel. From Finland, Pirjo Linnakylä University of Jyväskylä) is in the Reading Expert Group. Denmark is represented by Mogens Niss (Roskilde University) in the Mathematics Expert Group, and Sweden by Ingemar Wedman (University of Stockholm) in the Cultural Review Panel.

PISA 2003: No cultural review panel was to be found anymore. Further, the Functional Expert Groups were re-named to Subject Matter Expert Groups (SMEGs). The problem-solving test development was done solely by the following UK experts from the University of Leeds: Peter Poole, Bronwen Swinnerton and John Threlfall. Wynne Harlen was a member of the Science and Problem Solving Expert Group.

[4] This consisted of nine test booklets, randomly assigned to students in each participating school.

[5] Critique for cultural bias in PISA testing has come from many directions. We want to highlight two reports that commented on 'culturally balanced' assessment, not so much for their content but for their origin: the first, *Culturally Balanced Assessment of Reading –C-Bar* (2003) was a European project, commissioned by The European Network of Policy Makers for the Evaluation of Education Systems and co-financed by eight European countries (Belgium, England, Finland, France, Italy, the Netherlands, Norway and Sweden). The

tested from specific national curricula is central to this attempt and raises interesting issues in relation to future attempts to extend PISA to younger students. The decontextualisation from specific national curricula seems central to the comparability issue.

The next section examines the actual delivery PISA 2000 and 2003 surveys, in an attempt to make some general conclusions about the nature and scope of the exercise.

'From educational inputs to learning outcomes': The PISA surveys (2000, 2003)

PISA aims at providing a new basis for policy dialogue and for collaboration in defining and operationalising educational goals —in innovative ways that reflect judgements about the skills that are relevant to adult life. It provides inputs for standard setting and evaluation; insights into the factors that contribute to the development of competencies and into how these factors operate in different countries, and it should lead to a better understanding of the causes and consequences of observed skill shortages. By supporting a shift in policy focus from educational inputs to learning outcomes, PISA can assist countries in seeking to bring about improvements in schooling and better preparation for young people as they enter an adult life of rapid change and deepening global interdependence. (OECD, 2001, p. 3)

The report on the first PISA results *Knowledge and Skills for Life* (OECD, 2001) declared PISA as the most rigorous, 'forward-looking' (OECD, 2001, p. 4) assessment of student performance; according to the report, even though the programme assesses pupils who are still in school, 'PISA is based on a dynamic model of lifelong learning' (OECD, 2001, p.4). In fact, the term 'literacy', usually used in adult and lifelong education, is used by PISA as the new term that combines not only knowledge of curricula, but most crucially its application in real-world situations. According to the report, literacy should be measured in a continuum that would give an indication of students' ability to continue learning throughout life.

The focus of PISA 2000 was on reading literacy and the assessment spread in 32 countries[6], 28 of which were OECD members. Apart from reading literacy, mathematics and science were also assessed, as well as student motivation, attitudes towards learning, familiarity with computers and what was called 'self-regulated' learning, 'aspects of students' strategies for managing and monitoring their own learning' (OECD, 2001, p. 19). The reasoning for focusing more closely on reading, mathematics and science was based on the findings of the International Adult Literacy Survey (IALS): 'adults' reading and mathematical literacy skills are closely related to their labour-market success and earnings, and have an effect that is independent of their educational attainment' (OECD, 2001, p. 19).

Students took a written assessment of two hours; two thirds of this time was devoted to reading literacy. Students were also asked to complete a questionnaire, which covered their

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second, *The Use of National Reading Tests for International Comparisons: Ways of overcoming cultural bias,* was commissioned by the European Network of Policy Makers and was co-financed by the European Commission and four countries (England, Finland, France and Italy) (online, European Network, 2007). Janet White (Qualifications and Curriculum Authority, DfES) and Hannu-Pekka Lappalainen (from Finland) have contributed in both reports.

[6] In 2002, 13 more countries joined the PISA 2000 survey, giving a total of 45 countries having given results of the first PISA testing round.

economic and social background, as well as their study habits in school and at home. Additional information in relation to resources and the organisation of schooling was collected from teachers and head-teachers, in order to gather relevant information related to the factors that affect students' performance and its applicability in real life situations. By examining patterns of student proficiency in different countries alongside information about the characteristics and experiences of students, PISA attempted to cast light on the combined factors that promote student and school success. This offered the potential for correlational data in addition to international comparative outcomes data.

PISA 2000 covered all students born in 1984, irrespective of their grade in school. Students had to reply to both multiple choice and open-ended questions. The testing assessed three main domains:

- The *processes* that students need to perform (for example, retrieving written information from a text)

- The *content* or structure of knowledge that students need to have acquired (for example, familiarity with scientific concepts or various written forms); and

- The *contexts* in which skills and knowledge are applied (for example, making decisions in relation to one's personal life or understanding world affairs).

In terms of reading literacy in particular, PISA defines it as the ability to understand, use and reflect on written texts in order to participate effectively in society. Basic reading ability is assumed; therefore, students were assessed on their proficiency in retrieving information (the ability to locate information in a text); interpreting texts (the ability to construct meaning and draw inferences from written information); and reflecting and evaluating (the ability to relate texts to their knowledge, ideas and experiences). Students were given different forms of reading material, from continuous prose (narration, exposition and argument), to non-continuous texts, such as lists, tables and diagrams.

Mathematical literacy is defined as 'the capacity to identify, understand and engage in mathematics and to make well-founded judgements about the role that mathematics plays in an individual's current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned and reflective citizen' (OECD, 2001, p. 22). As with reading, mathematical literacy is more concerned with putting mathematical knowledge and skills to use, rather than simply testing this knowledge as taught within the school curriculum. The difference of examining pure and applied mathematics is of significance, with pure mathematics being more focused on abstract mathematical notions (i.e. algebra), whereas applied maths refer to more everyday life situations. PISA examines mainly applied maths, with the result that countries like Norway or Germany fall back on the results, since their curricula focus more on pure.

In mathematics, some of the questions were multiple choice and others were open-ended, in order to assess higher-order mathematical processes. Questions ranged from simple computations to mathematical thinking, generalisation and analysis, and assessed students in terms of mathematical concepts, such as quantity, space and shape, change and relationships, and uncertainty. Students' mathematical skills were tested in their application
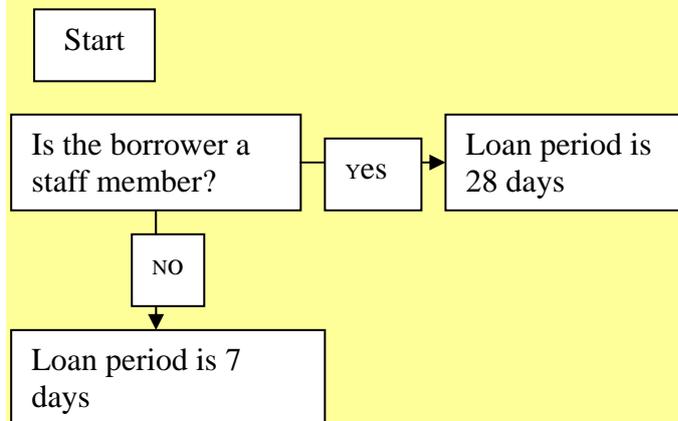
in students' private lives, school lives, in work and sports, the local community and society and in scientific contexts.

Finally, scientific literacy is defined as 'the capacity to use scientific knowledge, to identify questions, and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity' (OECD, 2001, p. 23). Students were presented with a real scientific situation, about which questions were asked. PISA assessed students' applied knowledge on the concepts of structure and properties of matter, forces and movement and the issues of biodiversity and geological change. Again, as with reading and mathematical literacy, the context of scientific literacy for PISA is students' everyday lives.

PISA 2003 and PISA 2006 followed a very similar pattern of testing, however each looked in depth at a different 'major' domain: PISA 2003 focused on mathematical literacy, whereas PISA 2006 on scientific literacy. In particular, PISA 2003 expanded the survey to 49 countries and, apart from looking at mathematics proficiency, the testing also assessed students' cross-curricular, problem-solving abilities. According to the report for PISA 2003 *Learning for Tomorrow's World* (OECD, 2004b), the purpose of this new assessment was to examine students' general competencies to meet life's challenges. The tasks, rather than attached to specific curriculum areas, assess students' ability to solve everyday problems that they might experience at the work place or in other life situations. The problems posed require students to show their understanding of a problem, identify relevant information or constraints, represent possible alternatives or solution paths, select a solution strategy, the solution itself and reflect upon it, and communicate it to others. Japan, Korea and Finland presented the best scores in problem solving, whilst Mexico, Turkey, Brazil, Indonesia and Tunisia the worst. As an example, one of these tasks was:

Library system

The John Hobson High School Library has a simple system for lending books: for staff members the loan period is 28 days, and for students the loan period is 7 days. The following is a decision tree diagram showing this simple system:

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┌──────────┐
│  Start   │
└──────────┘

┌────────────────────┐      ┌──────┐      ┌─────────────────┐
│ Is the borrower a  │─────▶│ yes  │─────▶│ Loan period is  │
│ staff member?      │      └──────┘      │ 28 days         │
└────────────────────┘                    └─────────────────┘
         │
     ┌──────┐
     │  NO  │
     └──────┘
         │
         ▼
┌────────────────────┐
│ Loan period is 7   │
│ days               │
└────────────────────┘
```

The Greenwood High School Library has a similar, but more complicated, lending system:
- All publications classifies as 'Reserved' have a loan period of 2 days.
- For books (not including magazines) that are on the reserved list, the loan period is 28 days for staff, and 14 days for students.
- For magazines that are not on the reserved list, the loan period is 7 days for everyone.
- Persons with any overdue items are not allowed to borrow anything.

Question 1:
You are a student at Greenwood High School, and you do not have any overdue items from the library. You want to borrow a book that is not on the reserved list. How long can you borrow the book for?

Question 2:
Develop a decision tree diagram for the Greenwood High School Library so that an automated checking system can be designed to deal with book and magazine loans at the library. Your checking system should be as efficient as possible (i.e. it should have the least number of checking steps). Note that each checking step should have only two outcomes and the outcomes should be labelled appropriately (eg. Yes and No).

(OECD, 2004c)

The above is only one example of the kind of management skills that 15 year olds should apply to succeed in PISA testing and apparently in life. Many other tasks given to students in the PISA assessment would seem far more likely to be examining the suitability of candidates for acquiring a post in the job place, rather than in the everyday realities of the students' school yard. In addition, the probability of students in the rural countryside of say Uruguay to have had the experience of a library lending system in order to successfully build 'a decision tree diagram' is highly disputable.

Indeed, instead of assessing knowledge on the basis of the curriculum or the cultural and life experiences that 15 year olds have, PISA

> *...provides international comparisons of the performance of education systems, with strong, cross-culturally valid measures of competencies that are relevant to everyday, adult life. Assessments that test only mastery of the school curriculum can offer a measure of the*

internal efficiency of school systems. They do not reveal how effectively schools prepare students for life after they have completed their formal education. (OECD, 2001, p. 27).

Hence, it is hoped that PISA will give policy-makers useful information in regard to what contributes to broader educational success, rather than provide them with results in isolation. The emphasis is thus upon effectiveness. The concepts of comparison and internationalisation give PISA its substance, since it is in the comparisons of school outcomes across the world that policy makers can now find answers for their problems:

PISA offers a new approach to considering school outcomes, using as its evidence base the experiences of students across the world, rather than in the specific cultural context of a single country. The international context allows policy-makers to question assumptions about the quality of their own country's educational outcomes. (OECD, 2001, p. 27).

This field of comparison through numbers has become very powerful in relation to the politics of education policy production within member and other participating nations. The voluntary participation of non-member nations is significant here.

Finally, in terms of policy-making, apart from considerations regarding quality, equity is also in the list of priorities for PISA. It is interesting to examine what issues are regarded as related to equity in education:

Gender differences in student performance, attitudes and motivation; the needs of both the most vulnerable and the exceptionally well-performing students; the role of engagement and motivation as prerequisites for adequate performance and future destinations; the nature, development and impact of literacy skills; and aspects of learning strategies and self-concept. (OECD, 2001, p. 28)

PISA 2000 findings showed wide differences amongst countries in the knowledge and skills of 15-year-olds in reading literacy. Nonetheless, the differences between countries represent only a fraction of the overall differences, with differences within countries being much greater. According to the PISA report, 'catering for such a diverse client base and narrowing the gaps in student performance represent formidable challenges for all countries' (OECD, 2001, p. 65). Around 10 per cent of all participants were capable of sophisticated reading tasks, while 6 per cent were incapable of simple tasks and 12 per cent capable of only basic tasks. The PISA report alerted participants to a situation where countries present wide gaps between the high-performing and under-performing pupils. Finland, for example, is considered exemplary because of the very small variation of pupils' performance in reading literacy. On the other hand, as the OECD itself notes, 'disparities can result from the socio-economic backgrounds of students and schools, from the human and financial resources available to schools, from curricular differences, and from the way in which teaching is organised and delivered' (OECD, 2001, p. 66). It is suggested that the overall variation tends to be greater where students have been channelled into different kinds of school from an early age, where there has been early selection. On the other hand, for countries such as Austria, Belgium, Germany, Hungary and Poland, reforms might need to target those low performing pupils, precisely because of the huge gaps between their performance and that of the rest of the student population. There are important policy implications here for how the comparative data ought to be read within nations.

In terms of mathematical and scientific literacy, many countries have similar rank orders as with reading literacy but there are exceptions: Japan and Korea perform far better in mathematical and scientific literacy than in reading. According to the report, 'mathematical literacy scores vary more between countries than reading scores, possibly because they are more closely linked to schooling' (OECD, 2001, p. 90). The report continues:

> *Although the variation in student performance within countries is many times larger than the variation between countries, significant differences between countries in the average performance of students should not be overlooked. To the extent that these are predictive of student career paths, these differences may, particularly in subject areas such as mathematics and science, raise questions about countries' future competitiveness…As much as spending on educational institutions is a necessary prerequisite for the provision of high-quality education, the comparison also suggests that spending alone is not sufficient to achieve high levels of outcomes and that other factors, including the effectiveness with which resources are invested, play a crucial role. (OECD, 2001, p. 94).*

This OECD observation is significant in its apparent linking of performance in maths and science on PISA to national economic competitiveness and the suggestion that funding levels are not the only significant variable in affecting the quality of student outcomes.

Apart from the specific knowledge areas assessed, PISA 2000 also examined students' disposition towards learning, in order to examine how well prepared they are 'to acquire the new knowledge and skills necessary for successful adaptation to changing circumstances' (OECD, 2001, 98). This is a dispositional measure of lifelong learning. This is because 'once they leave school, people have to manage most of their learning themselves. To do this they must be able to establish goals, to persevere, to monitor their progress, to adjust their learning strategies as necessary and to overcome difficulties in learning' (OECD, 2001, p. 98). Finally, gender differences were also assessed, as well as the relation of family background with the student performance, the learning environment and the organisation of schooling.

In terms of the findings of PISA 2003, the results did provide a basis for some comparisons over time, nevertheless it was suggested that this should be done with caution (OECD, 2004b). Further, new countries entered the survey in 2003, such as the Slovak Republic and Turkey, while the United Kingdom did not meet the PISA response rate to have comparable and valid data, therefore it did not enter the results tables at all. However, the general results for mathematical literacy are similar to the reading literacy results of 2000, suggesting that educational systems which do well in one area of study, do well in the rest as well. The focus is heavily on those countries whose under-performance is below baseline:

> *While the number of students with strong mathematical knowledge and skills has relevance for the future competitiveness of knowledge-oriented economies, a particularly important aspect of each country's skill profile is the proportion of students who lack baseline mathematical skills, as economies will also need a broadly educated workforce, and individuals who are without these skills are likely to face difficulties in the adult lives. (OECD, 2004c, p. 8)*

This is an important observation in respect of mathematical knowledge and its argument that two aspects are important for the international competitiveness of nations, notably, the quality of the top performers and the overall capacities of the total student population. One can also see here the symbiotic relationship between the comparative data work and the construction of education policy as a central arm of national education policy located in what is deemed to be a global economy.

The results from PISA 2006 are not available yet. PISA 2009 will focus again on reading literacy; according to the Directorate for Education at OECD and its longer term strategy for the development of PISA (OECD, 2005), PISA 2009 will allow for comparisons between the results in 2009 and 2000. The strategy also refers to many countries' proposal for PISA to be delivered every four rather than three years. As already discussed, consideration was also given to including a younger age group, possibly 9-year-olds, in surveys in the future. Finally, the strategy discusses how the core and optional modules would be linked to the key analytic objectives of PISA, namely to facilitate international comparisons on: 1) the *quality* of learning outcomes; 2) *equality* in learning outcomes and *equity* in learning opportunities; 3) the *effectiveness* and *efficiency* of educational processes; and 4) the *impact* of learning outcomes on social and economic well-being. The achievement of some of these will, of course, require correlational and other analytical work with the data utilised for *Education at a Glance*. There is also some division amongst participant nations in respect of these possibilities. Those with highly developed national infrastructure in respect of statistical collections and policy usage of performance and other data in policy development, such as England, are strongly supportive of such developments, others such as the USA are happier with PISA as simply providing a measure of international comparative performance data.

PISA has come a long way in a short period of time and has consolidated the role of OECD and its Education Directorate as preeminent globally as the organisation for developing and analysing comparative international educational performance data. This role reflects a number of confluent factors, not least of which has been the positioning of the OECD itself. The development of a policy as numbers approach in several of the member and participating nations in the context of globalization and a policy consensus towards competitiveness of national economies being dependent on the comparative quality of educational performance, are very significant factors as well. PISA results now receive a very high profile within national media and as such as to the fore in the consciousness of senior policy makers in education as well ministers and other politicians. Media coverage of PISA results is very substantial and perhaps represents another manifestation of the 'mediatization' of education policy processes (Fairclough, 2000, Lingard and Rawolle, 2004).

The case of Finland

The outstanding success of Finnish students in PISA has been a great joy but at the same time a somewhat puzzling experience to all those responsible for and making decisions about education in Finland. At a single stroke, PISA has transformed our conceptions of the quality of the work done at our comprehensive school and of the foundations it has laid for Finland's

future civilization and development of knowledge. Traditionally, we have been used to thinking that the models for educational reforms have to be taken from abroad. For a long time, we thus turned to Germany for these models...Today, thanks to PISA, the situation seems suddenly to have changed, with Finnish schooling and Finnish school practices in the focus of the international attention. (Välijärvi et. al. 2002, p.3)

Indeed, 'the Finnish miracle of PISA' (Simola, 2005) has been at the centre of international attention since the first PISA results were published in 2001. Even though the PISA success[7] was initially received within the country with great surprise ('from a country following the examples of others to one serving as a model for others' [Välijärvi et. al. 2002, p.3]), the Finnish ministry of education was soon to attribute the positive results to an education system that offers both high quality and equality to its students (online, Ministry of Education, 2007). Even though the increased interest in quality assurance could be attributed to the slow emergence of neo-liberal discourses into education policies, the principle of equity has a long tradition in the Nordic education system (Lie *et. al*, 2003). PISA reports specific to the Nordic educational model claim that high quality and equality in education have been fostered through a publicly funded comprehensive basic education until the age of 16 (Lie et al., 2003). Some of the factors that have contributed to the more recent Finnish success, according to the Ministry of Education in Finland, are:

- Equal opportunities to all students, irrespective of domicile, sex, economic situation or linguistic and cultural background, through free education;

- Comprehensive schooling –no school selection or segregation;

- Highly qualified and committed, autonomous teachers;

- Student counselling and special needs education;

- Evaluation of learning outcomes, but no testing of national outcomes or inspection systems;

- Broad political consensus on education policy;

- Flexible, devolved school administration system;

- Interaction and building of partnerships at all levels of activity;

- A student-oriented, active conception of learning. (online, Ministry of Education, 2007).

Nevertheless, in regard to reading literacy for example, students' own engagement and interest in reading —most often associated with family background (cultural communication between parents and children, cultural possessions at home and parental occupational status were the PISA questions that determined this) — were some of the major determinants for the high results. According to PISA Välijärvi et al., the Finnish PISA team, support that the Finnish comprehensive school system has been influential in promoting the reading of diverse materials amongst Finnish students, as well as managed to even out inequalities depending on students' social background (2002). According to the Ministry, it

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[7]   Finnish students were first in reading literacy in both surveys, fourth (2000) and second (2003) in mathematics, third (2000) and joint first (2003) in science and joint second in problem-solving skills (2003) (OECD, 2001; 2004).

is in the balance of offering high quality and equality of educational outcomes that the Finnish education system seems to perform best.

According to Välijärvi et al., non-differentiation is the secret of the success of the Finnish comprehensive school. Instead of tracking and streaming, Finnish teachers are in a position to cater for the needs of individual students. This is thanks to the 'highly educated, a pedagogical expert' (2002, p.42) Finnish teacher, who is generally regarded very highly in Finnish society. In addition, due to the absence of any national tests or examinations upon completion of compulsory schooling, teachers' assessment of their pupils is all the more important. Finland does have national grading guidelines for performance but, according to the Finnish PISA team, these are flexible and allow for a broad definition of student achievement (Välijärvi et al., 2002). Teachers in Finland take decisions themselves in regard to the textbooks they are going to use; the early 1990s reform on the curriculum brought greater curricular flexibility and pedagogical freedom than ever before. Therefore, the official reporting on the country's PISA results supports that comprehensive schooling, in addition to teacher autonomy and motivation, were the decisive factors for the high performance of Finnish students.

In terms of the ways that PISA results were received by the Finnish government and media, it is remarkable that the Finnish press was found to have mentioned the country's success in only eight pages, whereas Germany, one of the lowest performers, received 687 pages of press attention (European Network, 2004). Interestingly, the announcement of the results of an international assessment of this magnitude was received with neutrality by the media and perhaps with surprise from the Finnish government, which apparently decided to move into announcing further reforms, despite the almost global acclaim. It seems that international assessment exercises, like PISA, mobilise governments into action, even when these manage to 'score' first. This is not simply an exercise of comparison against the performance of others —in the case of Finland, PISA meant a constant need to improve against the country's results themselves:

> *Paradoxically, shortly after the international publication of the first PISA results, the Finnish government made a decision to harmonise the education system by adding to the share of compulsory studies in comprehensive schools and by giving more weight to core subjects…Assessment results and political decision making on education do not always go hand in hand. (Välijärvi et al., 2002, p.44).*

Välijärvi et al. (2002) recognize Finland's cultural homogeneity as one of the most significant factors for understanding the country's success on PISA. They attribute it to the exceptionally broad cultural and political consensus about the main lines of educational policy. Välijärvi et al. (2002) maintain that the lack of any serious conflicts in the country's history in relation to education policy questions resulted in a broad national agreement on the merits of the comprehensive school system in the 1960s and 1970s. In fact, PISA and the Finnish success stimulated discussions and disagreements in a country that had not known such disputes in educational policy before:

> *This is evident from the lively debate sparked off by the results of PISA in Finland, particularly when compared to results of some national assessments, displaying various*

defects in the knowledge and skills of Finnish students as well as growing differences between schools. All this seems to imply that in years to come, finding common values and a political consensus about central educational issues may be getting more difficult also in Finland (Välijärvi et al. 2002, p. 45).

Nonetheless, apart from what the future might bring in relation to conflicts and disagreements about the country's educational policy, it is the changing social structures in Finland that might affect the country's results in the years to come. Indeed, in the PISA data, the number of non-native students taking the exam was as small as circa 1%; cultural homogeneity has contributed to the Finnish 'miracle', a miracle that more multicultural societies, such as Germany for example, found very difficult to achieve. The PISA results might suggest that countries should look at Finland to find examples of good practice. However, what PISA numbers do not point out, is that Finland, due to the increasing immigrant population, might actually find itself in a place where, rather than giving, they might will need to take advice from countries which faced these challenges earlier. Instead of counting numbers that equate to success, the Finnish PISA team argue for a far more complicated system of interrelated factors that could explain the advantages and disadvantages of the national education system:

Finland's high achievement seems to be attributable to a whole network of interrelated factors, in which students' own areas of interest and leisure activities, the learning opportunities provided by schools, parental support and involvement as well as social and cultural contexts of learning and of the entire education system combine with each other. (Välijärvi et al., 2002, p.46)

Instead of focusing on the cultural homogeneity of the present, Simola (2005) explains the success of Finland on the basis of historical developments that the country experienced in the past. First, according to him, Finnish schooling can be better understood when seen under the light of the influences it has received from the Russian Empire. Simola attributes what he sees as a relatively authoritarian, obedient and collectivist mentality to an 'eastern flavour' that can be found generally in the Finnish culture. In addition, he argues that the civil war the country experienced immediately after the First World War has led to a trauma, resolved not only in the broad consensus against the Soviets in the 'Winter War' (1939-1940), but crucially in the collective mentality that characterises the Finnish society in general and in educational perspectives in particular (Simola, 2005). In addition, teacher professionalism, the relative high status of teachers in Finnish society, their identification with the upper-social strata and their general pre-disposition towards more conservative pedagogies, could be additional factors that have contributed to the positive PISA results. Nonetheless, Simola's analysis is interesting particularly in relation to some of the paradoxes that the PISA results suggest about the Finnish education system. In his words,

Two paradoxes are identifiable in the success story of Finnish schooling, First, the model pupil depicted in the strongly future-oriented PISA 2000 study seems to lean largely on the past, or at least the passing world, on the agrarian and the pre-industrialized society, on the ethos of obedience and subjection that may be at its strongest in Finland among late modern European societies…the second paradox is that the politically and pedagogically progressive

comprehensive school reform is apparently being implemented in Finland by politically and pedagogically rather conservative teachers. What is more, the outcomes seem to match the aims better than in a few other countries. (2005, p.466)

Even though assessment exercises like PISA have indeed enriched our knowledge about educational statistics, the understanding of the reasons behind good or bad results, as the case of Finland has shown, is a far more complicated matter. It could be argued that applying a two hour competencies test has indeed offered interesting findings in relation to prediction of future success in world markets. However, it does not provide adequate interpretation of how these results have come about, nor does it justify why these aspects are considered more significant than others —we will return to this later in this Working Paper.

The case of Germany

The results of PISA 2000 had a major effect on Germany's educational system. Rankings that placed it 20[th] in reading, mathematical and scientific literacy amongst 32 countries, were certainly not music to the ears of policy makers, school teachers and parents. On the contrary, the negative results dominated the German media, which presented them in almost all newspapers. Project leaders gave several interviews, experts offered their interpretations and roundtable TV discussions were also held (online, Network study, 2004).

As a response to the PISA findings, German educational authorities organised a conference of ministers in 2002 and proposed reforms of an urgent nature. These involved:

- Measures to improve reading comprehension from pre-primary to secondary education;

- New core curricula to be introduced for mathematics, the German language, English as a foreign language, in addition with developing standards for measuring students' competencies upon completion of secondary schooling;

- All federal states to introduce large-scale assessment testing at the end of primary and secondary education;

- Measures for improving the skills of pupils of migrant parents;

- Some federal states to introduce whole day schools. (online, Network study, 2004)

Teachers were under increasing pressure, especially with the delivery of new reform measures, whereas the academic community in Germany seemed to use the PISA results more than any other assessment exercise ever before. According to the European Network study (2004), PISA results meant that the German government needed to take urgent measures towards focusing more on outputs rather than inputs and develop standards regarding skills upon completion of school and entry into the labour market. According to the Federal Ministry of Education and Research (online, Federal Ministry, 2007), PISA is less focused on the structures and curricula of the educational system; the focus is on the requirements that the future brings. Therefore, and despite criticisms of the PISA testing frame and statistical validity that came from within the country (see Wuttke, 2006), new projects were initiated. Some of them, in direct response to the PISA testing model, were CHIK (Chemie im Kontext), PIKO (Physik im Kontext) and SINUS (Steigerung der Effizienz

des mathematisches-naturwissenschaftlichen Uniterricts) (Federal Ministry, online). Further, the PISA-Konsortium Deutschland produced reports on the development of the competencies of German pupils (Prenzel et. al, 2004). Finally, national tests of learning outcomes in core subjects were also introduced for the first time in the country. What we see here appears to be a common phenomenon in relation to PISA results and their reportage: the initial critique of the statistics themselves and a questioning of their validity, but then an apparent acceptance of the data and consideration of appropriate policy responses to the situation as defined by the comparative data.

In terms of national experts' explanations about the results (European Network, 2004), it was argued that teachers in Germany focus their instructional activities more on the whole class rather than on individual students. Learning in Germany is more curriculum-based, rather than focused on competences; classes are very multicultural, a fact that teachers sometimes find hard to deal with; pupils have little experience in testing; and, instead of focusing on mathematics and science, German pupils learn chemistry, biology and physics. Finally, even though not explicitly, German teachers' qualifications were also considered as a reason for the bad results (European Network, 2004).

Pongratz (2006) maintains that no other empirical study managed to stir up the educational policy landscape in the country in the way that PISA 200o did.. He compares the 'flood' of discussions and reform measures that PISA brought with the crisis scenarios that German education experienced in the 1960s, and particularly what was then called the *Bildungskatastrophe* (Pongratz, 2006). According to him, the 'PISA-shock' has had major impact not only on policy making, but most crucially on the public consciousness. However, according to him,

> *This result is clearly cause for critical self-reflection, but it is not in itself a sufficient basis for the frantic radicalism of the resultant reform measures. It seems that something is operating through reform strategies of diverse types that has the capacity to exercise enormous pressure. This pressure functions as a strategic element within a currently active global transformation process driven by a wide variety of organisations and actors. (Pongratz, 2006, p.472)*

Huber and Gördel (2006) argue that, even though quality assurance systems have been promoted by transnational agencies and adopted by European and other countries since the 1980s, Germany introduced them later in the mid-1990s. In fact, 'a clear-cut change from an input-controlled and centralised to a more output-controlled, decentralised and deregulated supervision system was initiated in most German Länder no more than at the beginning of the century' (Huber and Gördel, 2006, p.196). The PISA results, apart from curricular reforms, brought a whole new understanding of the German school as a self-managing organisation. This new system entails a range of new quality control measures, which are all applied in different combinations by the federal states: school inspections, self-evaluations, assessment tests and teacher professionalisation have turned the German education system into a peculiar mixture of centralisation and decentralisation: a highly bureaucratic and legally oriented type of accountability control. With Germany we also see

the complexity of PISA national data collection, given its federal political structure and Lander responsibility for schooling.

The UK case

PISA is administered separately in England, Scotland and Northern Ireland (Wales is included in the English sample), but the UK is regarded as a single national entity by the OECD for PISA purposes. The Department of Education and Skills (DfES) commissioned the Social Survey Division of the Office for National Statistics (ONS) to carry out the survey in England. The Social Survey Division also conducted the survey in Northern Ireland, in collaboration with the Central Survey Unit of the Northern Ireland Statistics and Research Agency. The Northern Ireland survey was commissioned by the Department of Education. Finally, the Scottish Executive commissioned the Scottish Council for Research in Education (SCRE, University of Glasgow) to conduct the survey in Scotland.

Starting from England, both in PISA 2000 and 2003, the country found obstacles in reaching the required response rates, in order to be included in the survey. In PISA 2000, England did not meet the OECD's school response threshold and just managed to meet the student response rate (initial response rates should be at least 85% at the school level and 80% at the student level). A sample of 181 schools was selected to participate in the survey and local education authorities were informed of any LEA schools that were approached. Even though cooperation was voluntary, efforts were made to encourage full participation including reminder letters, telephone contacts and visits to head-teachers by ONS staff. Where schools refused to take part or did not respond, a substitute school was approached to participate in their place. In the schools that did participate, the survey was administered by ONS interviewers who brought the tests to the schools the day of the testing, supervised the examination conditions and took the tests with them when leaving the school (Gill, Dunn and Goddard 2002). According to the ONS report,

> In some countries which participated in PISA, students answered additional questions about how they managed their own learning and their familiarity with information technology. These additional questions were not asked in England to keep the burden on schools and students to a minimum. (Gill, Dunn and Goddard, 2002, p. 22)

The response rate fell short of the minimum requirement specified by the OECD of at least 65% of schools before replacement and at least 85% after replacement. Nonetheless, after evidence was provided on the characteristics of the responding schools, the OECD included the UK in the international report of 2000.

In PISA 2003, however, England fell lower than the required response rate at both the student and school levels, with a school participation rate of only 64%. The OECD Technical Standards Committee allowed England to improve the response rate by including designated replacement schools, however the required response rate (96% in this instance) was not met[8]. According to the PISA findings report of 2003 (OECD 2004):

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[8] See Micklewright and Schnepf (2006) for a critique of the OECD's decision to exclude the UK sample from PISA 2003

The uncertainties surrounding the sample and its bias are such that scores for the United Kingdom cannot reliably be compared with those of other countries. They can also not be compared with the performance scores for the United Kingdom from PISA 2000...It should be noted that Scotland and Northern Ireland carried out an independent sample that met the PISA technical standards.

Despite these obstacles, media in the UK showed very high interest for the survey, producing headlines such as 'School is far more fun in Scotland', 'Teenagers are world-beaters when it comes to maths and science' etc. (European Network, 2004). In contrast to the press in other countries, the UK media did not report extensively on the negative elements of the results. In particular, the significant gap between the performance of pupils from well-off and deprived backgrounds that was to be found in both the 2000 and 2003 surveys[9] did not attract media attention at all. On the day of the publication of the 2000 results, PISA generated nine prominent national newspaper lead stories and made it to the national news twice on that day and several times by the end of the week.

Tony Blair, the UK Prime Minister, commented on the PISA 2000 results on the day of the publication in the House of Commons: 'The country should be very proud of the OECD survey, which is a tribute to the hard work of pupils, heads, teachers, governors and parents across the country' (European Network, 2004, p. 13). In PISA 2000, the UK took the 7th position in reading literacy, the 8th position in mathematical literacy and the 4th position in scientific literacy. The Department for Education and Skills produce booklets summarising the findings for teachers and headteachers and distributed them electronically through 'TeacherNet', the Department's website for teachers and heads of schools. Finally, NASUWT and NUT, both teacher unions, held a joint conference on the PISA 2000 findings in 2003, which was very well-attended by teachers, policy makers from the Department for Education and Skills, OECD representatives and politicians (including David Miliband, Minister of State) (Online material, Teacher-net, 2007).

No concrete initiatives were undertaken in the UK in response to PISA results. As part of the process of explaining the data, England's above average performance was attributed to the fact that pupils at the age of 15/16 are preparing for their GCSE exams. Further, both the content and the style of the PISA testing with its emphasis on real-life contexts, and the combination of multiple choice questions with longer constructed responses, was very close to the GCSE examinations British students take.

In Scotland, the Scottish Executive published a report for PISA 2000 through its Education and Young People Research Unit (Scottish Executive, 2002). According to it, in PISA 2000,

Scotland was in the top third of countries in all subjects assessed. The results indicated that Scotland's 15 year olds performed significantly better in terms of attainment in mathematics and science than our 9 and 13 year olds did in earlier international studies, and this is likely to be the case in reading too. (Scottish Executive, 2002, p. 3)

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[9] Valid statistical comparisons within the UK could be made in PISA 2003, therefore OECD, even though does not include the UK in the graphs comparing the participating countries, offers the UK results as additional at the bottom of all tables/ graphs, in order to show the valid within country results.

In PISA 2000 in Scotland, the tests were supervised by the schools themselves and not by external evaluators. The intended school sample was 120 schools and completed tests and questionnaires were received from 99 schools, achieving a response rate of 82%; a total of 2500 pupils completed the PISA tests. In the Scottish Executive report, the analysis of the results ranges from examining PISA results in general, to looking at the performance of the UK and sometimes offering Scotland-specific comments. Whenever one finds these, they mainly justify and reinforce the reasoning for measures and policies already under way. For instance, according to the report, the relationship between students' views on the school climate and students' performance was considered significant and thus, justifying 'the emphasis in Scotland in recent years through school self evaluation and the Ethos Network' (Scottish Executive, 2002, p 12). Also:

> *In schools where head teachers reported, on average, a higher degree of autonomy student performance on the reading literacy scale tended to be higher. This seems to support the case for devolved school management, which is well advanced in Scotland. Schools in which teachers were strongly involved in school management also performed better than others (p.12)*

> *Head teachers were asked about teacher related factors affecting school climate…The questions were whether they perceived learning in their school to be hindered by low expectation of students by teachers…teachers not meeting individual students' needs and students not being encouraged to achieve their full potential. In Scotland the regime of target setting for schools may help to influence the last of these (p.12).*

> *…This finding supports the emphasis placed on homework and supported study in Scotland (p.13).*

The Scottish results from PISA 2003 were reported by the SCRE Centre in the University of Glasgow, working together with the Information, Analysis and Communication Division, responsible for providing analytical services within the Scottish Executive Education Department. According to this report,

> *Scotland took part in PISA 2003 as an independent National Centre, meaning that it participated fully in all PISA activities as though it were a full country including separate quality monitoring and adjudication of test administration. (Thorpe, 2004, p.1)*

Indeed, the response rate in Scotland reached 90%, with 2700 pupils participating. Graham Thorpe, from the SCRE Centre, was the PISA project manager for Scotland for the 2003 round. The report that was produced analysing the Scottish results takes a distanced, in a sense analytical/ statistical, approach to the results, making no links to policies or practices in Scottish education. The report compares PISA results with the Trends in Mathematics and Science Study (TIMMS)[10], run by the International Association for the Evaluation of

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[10] TIMMS (Trends in Mathematics and Science Study) is the latest in a line of comparative international studies of attainment carried out under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). The IEA describes itself as an independent international co-operative of national research institutions and governmental research agencies. It is essentially a network of education researchers, though with a strong policy focus. IEA has sponsored surveys in a number of topics, including reading comprehension, French, English, civic, ICT and literacy, mathematics and science. The first full study of mathematics took place in 1964, and the second sweep of studies of mathematics and science followed in the 1980s. The Third

Educational Achievement (IEA) and with a domestic study, the Assessment of Achievement Programme (AAP)[11].

It seems that there have been numerous comparisons across PISA and TIMMS within the UK. First, major critique against PISA came from S.J. Prais from the National Institute of Economic and Social Research (Prais, 2003), who examined the differences between the by far improved PISA 2000 results of British students in mathematics in comparison to the TIMMS study of 1999. According to Prais, PISA's focus on everyday life situations gives little guidance on policy making for schools. He supports that the student sampling of the IEA study is more reliable than PISA's, that England's low response rate casts serious doubts about the inclusion of low-attaining schools and that the low response rate in England in general suggests an upward bias in reported average scores. Prais draws attention to the serious shortcomings, according to him, of the PISA study and suggests that 'planned repeats should be postponed until the underlying methodological problems have been resolved' (Prais 2003, p. 139). Prais is very critical of the nature of the questions asked, and in particular PISA's borrowing on IALS:

> *It has to be said that what may have seemed a worthwhile objective for a survey of adults, who had been out of school on average for some 25 years, is not necessarily a worthwhile objective for a survey of school pupils, where curricular and educational policy-making are very much at stake. (Prais, 2003, p.141)*

To conclude, Prais suggests the tactic of 'diplomatic inactivity' until PISA's methodology has been improved. Despite Raymond Adams's, head of the Technical Committee of OECD/ PISA, caustic response in the next issue of the same journal that Prais has 'pre-conceived ideas' (Adams, 2003, p.387) and that he has 'incomplete understanding and knowledge of the methodology of international studies' (Adams, 2003, p.377), Prais did not seem to change his mind; he came back with a rejoinder to Adams, supporting that, despite Adams's response, 'I still have to remain with my previous judgement' (Prais, 2004, p.572). In this (final?) response, Prais opens up the debate from narrow statistical issues to broader problems that PISA, according to him, presents. In order to do this, he quotes Harvey Goldstein:

> *Perhaps the major [reservation about PISA] centres around the narrowness of its focus, which remains concerned, even fixated, with psychometric properties of a restricted class of conceptually simple models. There is almost no reference [in the official PISA reports] to debates about the appropriateness of these models, nor is there reference to methodological and substantive critiques…the usefulness [of such international surveys] must remain in doubt and their value for money somewhat questionable. (Goldstein cited in Prais, 2004, p.572)*

Douglas Hutchinson and Ian Schagen from the National Foundation for Educational Research (NFER), describe the differences between TIMMS and PISA in a number of

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International Mathematics and Science Study (TIMSS) was held in 1994-5, and a repeat was held in 1998-9. Further studies followed on a four year cycle in 2003, and one is being set up for 2007. Forty-five countries took part in the 1995 TIMMS, 38 in 1999 and 49 in 2003 (Mullis et al, 2007)

[11] We need to find out more about this.

aspects and find that the similarities between the two studies are greater than their differences (Hutchinson and Schagen, ???). They argue that examination and testing are social products which evolve with change in society; therefore, according to them, with the advent of the knowledge society, it might be more significant for governments to analyse and specify what the future brings, rather than focus on the present. For this reason, they claim that PISA'S role is a significant one (Hutchinson and Schagen, ???). However,

> *It seems unfortunate that there are two large international studies in the field at the same time doing very similar things. As such they are bound to view themselves as competing. While competition can sharpen up an outfit's act, it can also have unfortunate consequences. PISA was able to hit the ground running to the extent that it has largely because it lifted its methodology from TIMMS. IEA has always been extremely open in the best academic way in allowing inspection of its methodology, but after this experience one would hardly blame them if they were to shield their working under the guise of commercial confidentiality. This would hold up the development of research capacity in many countries, and also make it less likely that methodology would be tested and proved in the normal academic procedure (Hutchinson and Schagen, ???, p.29)*

NFER has also done a validation study of the PISA 2000, PISA 2003 and TIMMS 2003 studies (Ruddock *et al.*, 2006) funded by the DfES, which also funded another research project, this time by the Southampton Statistical Sciences Research Institute, which examined the response bias in England in PISA 2003 and 2003 (Micklewright and Schnepf, 2006).

Finally, we want to refer to Harry Torrance's work and in particular his comparisons of mainly English results across three international studies, PISA, TIMMS and PIRLS 2001[12]. Torrance delves into a number of issues, such as cultural bias, age sampling, diversity of curricula, translation problems and even goes into examining specific results across the three surveys ('the intrigue is in the detail' (Torrance, 2006, p. 831)). He questions policy makers 'love' for the data generated and suggests that fear, rather than love, is probably closer to reality. Torrance maintains that,

> *Research studies have a responsibility to interpret and explain, in the light of prevailing theory, both using theory and developing it as appropriate…The facts do not speak for themselves. (Torrance, 2006, p. 834).*

We agree with Torrance. Nevertheless, at this moment we are not interested in the validity or the statistical comparability of the different international assessment exercises, nor if their results correspond to reality in some way or not. Rather, what we want to do instead, is examine how PISA and other instruments of this kind, attempt to constitute education by the very act of monitoring it. As Nikolas Rose (1999, p.198) notes, numbers as an inscription device constitute what they purport to represent. We want to utilise the description provide in this Working Paper and subsequent interview data, to create a theoretical frame which will enlighten our understanding of the relation between numbers, education and governance

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[12] This is another IEA study focusing on Reading at 4th grade.

and the role the OECD's work on Indicators and PISA plays in relation to new forms of governance and the new scalar politics associated with globalization.

The OECD's Indicators work and PISA: questions, considerations and theoretical frames

The cloud of data generated becomes a canvas on to which the committed can project what they want to see (Smithers, 2004).

What we do in a somewhat shorthand, cryptic way in this conclusion to this Working Paper is raise some issues about the theoretical frames and questions we might utilise to understand the Indicators and PISA work of the OECD. In subsequent work we also want to attempt to understand the relationships between this numbers work and that of the EU and the emergent European education policy field. We are also interested in the brokering of this international work within nations. However, in this conclusion we are only concerned with the OECD's Indicators and PISA work and the way in which it has moved the OECD's education work from a national to an international (maybe global) comparative perspective.

In the Introduction we indicated that we would draw upon the theoretical work of Rose, Foucault and Bourdieu to inform the data collection and the analysis in our research, recognising Bourdieu's (Bourdieu and Wacquant, 1992) important observation about the imbrication of one in the other. One major emergent question is:

- To what extent does this OECD work contribute to the constitution of an emergent global education policy field, a new scalar politics in education policy production and a new component in quality assurance work globally and in national education systems?

We will use Bourdieu's work on fields, capitals (including national capital) and the circulation of texts without contexts to interrogate and theorise our data.

Additionally, we will ask a number of questions of our PISA (and Indicators) data, including the following considerations, which as already noted, will be theorised and framed by insights from Foucault, Bourdieu and Rose:

- Performance-based testing lies at the heart of the PISA project; it is focused on outputs, therefore always projected forward, into students' lives and national futures. Hence, it ensures for itself its own 'lifelong' continuation. It is performed in cycles and therefore needs follow-ups, 'repeats', more rounds —it never ends.

- A second interesting question in relation to this circular process, is the question of time: which actors produce ideas/ concepts/ tests first, who reproduces or reinterprets them? Who produces what? For example, if the 'magistrature of influence' in PISA are the technical experts and groups, could policy be produced after the construction of the tests in order to justify and provide coherence to them? Apart from a specific paradigm, that is the general consensus for open market economies and liberal democracies within OECD, are specific concepts created also on the basis of their applicability for statistical reasoning and testing?

- Like literacy, PISA's object of testing, PISA concentrates on statistically averaged values. However, the focus is not achieving the average. Rather, like literacy, countries lie on a continuum; there is always something better to strive for. Therefore, no matter the 'scores', 'correcting' practices need to start immediately after the publication of the results. This is the effect of PISA (and other international comparative data). Think of Finland and the reform measures after PISA 2000. PISA does not simply produce 'truths'; it creates an incessant apparatus of self-control and improvement, self-surveillance at the national level to use the work of Rose and Foucault. Also, participation in PISA is voluntary for countries, for schools themselves: ensuring an increasing degree of 'responsibilization'. At the same time, participation in PISA is voluntary. However, despite its monitoring nature, more and more governments/ countries over the world want to take part. Foucault's theory of governmentality would be useful in this interpreting this situation.

- PISA is a prime example of the emergence of specific 'epistemic communities' (Haas, 1992), networks of experts at the origin of the production of new testing grounds and the circulation of new policy recipes. Michael Apple (2001) has made a comparable point about how the educational policy regime of neo-liberals requires outcomes accountability measures and this has seen the growth of a particular fraction of the new middle class, namely those with particular technical expertise. This is very evident within the OECD and in participating nations of PISA, particularly for example in England with its extensive testing and statistical infrastructure.

- Perhaps PISA is also a field of broad coalitions/ conflicts: politicians, bureaucrats, experts, industry representatives, journalists, technicians and educators seem to work together; conflicts produce new ideas and new compromises (see tensions between IEA and OECD, OECD and national experts) Bourdieu's concept of a global economic field, a related global educational field and competing agents and capitals might be useful here.

- Variety of policy reactions to PISA results from different countries. The cases of Germany and the UK are helpful here: from reforming the educational system almost in its entirety to apparently[13] not responding at all. How can we understand the different weight that the PISA results have for different countries? Further, how can we understand the influence of PISA in the different contexts within a country (England/ Scotland distinction). Is Bourdieu's concept of national capital useful here? Could the notions of centre/ periphery help us understand the different significance given to PISA (i.e. Australia in the periphery promotes it, the UK appears to be somewhat more indifferent). Could Bourdieu's notion of the national capital help us interpret the different trends?

- PISA reinforces the increasing significance that education has for economic development and hence for the work of OECD. This is why a separate Directorate of Education was established in 2002, perhaps this is also the reason that discussions

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[13] It might be that England's interest in Both PISA and the Indicators work is getting stronger as OECD'S comparative statistics generate media coverage and political response.

have moved from social justice and equity issues towards an economistic, outcome-focused analysis of education, measuring the (supposed) effectiveness of national systems.

- The significance of information technology development should not be neglected in an analysis of international assessment exercises –what can be delivered through software statistical systems and expertise today could not be delivered 20 years ago.

- However, PISA used a research framework that was developed by TIMMS to assess mathematics as a curriculum area, in order to apply it in an evaluation of whole education systems. Therefore, the technology might have improved, but alongside technology, there has been an emergence of a way of thinking about educational systems as quantitatively monitored and measured. This is not an assessment of maths anymore, this is an apparatus that develops concepts on education that *can* be statistically tested.

- The role of the media: PISA and *Education at a Glance* as well as spectacle (Lyotard) and as another example of the mediatization of education policy production (Lingard and Rawolle, 2004, Fairclough, 2000). (We note here how *Education at a Glance* is now launched in London because it generates greater media coverage than a launch in Paris.) Because of media coverage, politicians give credence to the findings and thus provide validity to the statistics.

- Foucault's concept of governmentality is also useful for looking at what is going on in respect of Indicators and PISA. Could policy-making be seen from the micro-lens of one's own strategising and organising in order to continuously adapt and improve? If policy making could be defined as the choice of tools for government, could we say that data offers schools, teachers, governments, countries, the OECD, a continuous bank of information on the basis of which one can set improved standards and goals? Is there now in place a system of national self-surveillance (in addition to internal systems of accountability), a new form of governance in relation to the Indicators and PISA work of OECD? How does this work in relation to the emergent European education policy field?

- The problem of 'over-abundance' of data: the case of England is interesting here. In both PISA 2000 and 2003 England had poor response rates probably due to the excessive demand upon schools for data collection and measurement. Scotland, on the other hand, had very good response rates in both assessments.

- We will also be concerned with the politics surrounding this indicators work. Although our focus has been on new forms of governance, OECD data also provides evidence around which a politics for educational change can be mounted. For example, while Scotland does well on average on PISA, there is substantial equity gap that needs to be and can be addressed.

Nikolas Rose's work on policy as numbers will also be very useful in our analyses, particularly his observations about numbers as inscription devices and their work as a 'rhetorical technique for 'black boxing' – that is to say, rendering invisible and hence incontestable – the complex array of judgements and decisions that go into a measurement,

a scale, a number'(1999, p.208). Such black-boxing is important in de-contextualising national education performance and locating it on an international/ global field of comparative performance. Set against OECD's support for a global economy, this international education comparative work is now central to its educational work.

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