

ROUTLEDGE HANDBOOK OF INTERNATIONAL EDUCATION AND DEVELOPMENT

This timely Handbook takes stock of the range of debates that characterise the field of international education and development and suggests key aspects of a research agenda for the next period. It is deliberately divergent in its approach, recognising the major ideological and epistemological divides that characterise a field that draws on many traditions. Leading and emergent voices from different paradigms and contexts are afforded a space to be heard, and each section puts current debates in larger historical contexts.

The Handbook is divided into four parts and book-ended by an introduction and a conclusion, the latter oriented towards the implications that the volume has for future research agendas. The first part explores major strands of debates about education's place in development theory. The second acknowledges the disciplining of the field by the Education for All movement and examines the place that learning, teaching and schools play in development. Part three looks beyond schools to consider early years, adult and vocational education but focuses particularly on the return to thinking about higher education's role in development. The final part considers the changing, but still important, role that international cooperation plays in shaping education in developing countries.

Featuring over thirty chapters written by leading international and interdisciplinary scholars, the *Routledge Handbook of International Education and Development* offers the first comprehensive and forward-looking resource for students and scholars.

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THE HEYNEMAN/LOXLEY EFFECT

Three decades of debate

Stephen Heyneman

Background

While the lower performance of students from particular ethnic and income groups and geographical regions was a long-demonstrated outcome of standardised testing (Francher and Rutherford 2012; Stodolsky 1997; Ogbu 1991), the application of computers to the question was new in the 1960s. The report of James S. Coleman et al. (1966) was among the first surveys of a nationally representative population and the first to combine multiple factors into discrete categories representing those from out-of-school and within school influences.¹ Conclusions from this report were stunning because they ran counter to long-held assumptions. Gamoran and Long (2007) quote Seymour; Martin Lipset as remarking to Daniel Moynihan that Coleman had found that “schools make no difference, families make the difference.”

Gameron and Long note that the report has been cited in 2,700 articles, averaging approximately 55 a year since 2000. What it implied, in effect, is that efforts to close the achievement gap among students by investing in better schools would be ineffective by comparison to equalising the student backgrounds within those schools. The basic conclusion was that educational institutions could not effectively address inequalities as long as there were remaining differences in parental income, occupational prestige and educational attainment.

Many reanalyses were conducted on the data themselves. Averch et al. (1974) concluded that little efficacy could be attributed to teachers with more experience, advanced degrees or with smaller class sizes. Mosteller and Moynihan (1972) and Jencks et al. (1972) argued that resources might be ineffective because of insufficient variation across schools. But the limited effect of school resources seemed to hold up even after the order in which variables entered the regressions was varied (Hanushek and Kain 1972) and even when the size of beta coefficients was considered instead of the proportion of variance explained (Smith 1972).

Meta-analyses attempted to summarise findings across the numerous studies from the 1980s and 1990s (Hanushek 1997; Greenwald, Hedges and Laine 1996a, 1996b). The basic conclusion was that, in some instances, higher levels of resources were associated with differences in academic achievement. On the other hand, it is difficult to identify the specific school qualities that make a difference. It is reasonable to suggest that policy decisions about how resources are distributed (Nacimiento 2008) or utilised within schools (Gameron and Long 2007) may be as important as simply identifying the level of resource differences across schools. Other styles and

forms of analytic techniques were invented and applied to the same set of questions. Konstantopoulos and Borman (2011) suggest that school effects are larger using the Coleman Report data when submitted to HLM techniques of analysis. Heyns argued that gain scores rather than performance at one point in time would be a superior means of calculating school effects (Heyns 1978); it was argued that school effects could be more accurately modelled not by noting what is in the schools but by treating each school as a separate and independent institution with a “fixed effect” (Rivkin, Hanushek and Kain 2005). Some of these debates spilled out into the popular press, with one scholar arguing that money invested in school quality has no effect (Hanushek 1989, 1996) while others argue that money invested in school quality has a significant effect (Greenwald, Hedges and Laine 1996a, 1996b; Hedges, Laine and Greenwald 1994).

All large scale education surveys were sometimes criticised as missing the point. The physical characteristics of the school were not the way to measure school quality; schools only provide a place where learning could take place. If one wanted to measure school quality, one would by necessity have to measure how learning occurs (Bidwell and Kasarda 1980; Barr and Dreeben 1983). This led to attention to within school processes (Camoran and Mare 1989; Oakes 2005) and to the discovery that certain school qualities had different effects on different kinds of pupils (Summers and Wolfe 1977).

International tests of academic achievement: first results

It began as an educational experiment. In the late 1950s, Torsten Husen from the University of Stockholm was visiting friends Benjamin Bloom and C. Arnold Anderson at the University of Chicago. “Why don’t we test for academic achievement internationally,” he asked, “the world could be our laboratory” (Heyneman and Lykins 2008: 106). This was the origin of the International Association for the Evaluation of Educational Achievement (IEA), a nongovernmental organisation that now includes 69 countries and assists in the testing of half a dozen academic subjects – foreign languages, reading literacy, mathematics, science, civics and writing.²

The IEA began as a loose association of university-based personalities interested in finding solutions to pedagogical and other classroom-related problems. It sought solutions that could not be found locally and over time. Gradually, the membership expanded to include international agencies and governments, and different sources of funding from foundations and private businesses (Heyneman and Lee 2014: 38).

Beginning with the wealthier countries, the IEA now includes many middle- and even low-income countries. The IEA surveys normally include detailed assessments of each country’s curriculum, textbooks and pedagogy. The surveys themselves include separate sources of information on schools, school directors, classroom teachers and students themselves. The process of designing the curriculum-based achievement tests and combining each of the sources of background information can take a decade to implement and, for some, become unaffordable. However, the need for a quicker, more easily implemented snapshot survey³ led the member-states of the Organisation for Economic Co-operation and Development (OECD) to sponsor the design of a new achievement test based not on each nation’s curriculum but on the basis of what was believed necessary for every student to be able to do. This performance-based test, called the Program for International Student Assessment (PISA), was first initiated in 2000 in 43 countries; in 2012, 65 countries participated. In addition to IEA and the OECD-sponsored studies, regional surveys have been designed for sub-Saharan Africa and Latin America, and there have been numerous national surveys. What had begun as an experiment in the 1960s over time has become an assessment requirement across much of the world. Between 1960 and 1989, there

were 43 international surveys of academic achievement. Between 1990 and 1999, there were 49 regional surveys and 205 local or national surveys, and between 2000 and 2009, there were 152 international surveys, 47 regional surveys and 324 national surveys. The percentage of countries participating in at least one of these three-types of academic achievement surveys includes 33% of the countries in the Europe and Central Asia region, 50% in sub-Saharan and the Arab States, 60% of the countries in East Asia and the Pacific region and 74% in the Latin America and the Caribbean region (Kamens 2013). The breadth and frequency of participation in international surveys today allows for a discussion of new and important issues such as the relationship between social cohesion and individual country performance, or the degree of in-country variation and the relationship with effective schools (Heyneman and Lee 2014).

The Heyneman/Loxley effect (H/L effect)

With the results from the first IEA surveys, it was possible for some to conclude that the “determinants of student achievement were basically the same in both developing and developed countries” (Simmons and Alexander 1978: 358). However, the evidence was not consistent. Even Simmons and Alexander admitted that home circumstances seemed to be less influential in Tunisia, Iran, Puerto Rico and Chile. They noted that student backgrounds in both primary and secondary schools “account for less variation in student performance in developing countries” (Simmons and Alexander 1978: 358). Their caveats might have been more clear had they included the early results from 18 countries summarised by Kifer (1977) or those of Bulcock, Clifton and Beebe from India (1977). In fact, escaping their notice were survey results from Uganda, Kenya, Rhodesia (among Africans), Ghana and Papua New Guinea (Heyneman 1980: 404).

Among the more startling of the studies from the 1970s was my own survey of primary schools of Uganda. A random sample of schools was personally visited in 1971 and took a year for me to collect. These schools were representative of five districts and two urban areas and constituted the first survey of primary schools in sub-Saharan Africa (Heyneman 1975). The results were released gradually, given that they seemed to be so divergent from the norm and given the fact that James Coleman was part of the dissertation committee that had to approve them.

The first findings appeared in 1976 in which it was simply pointed out that the correlations with student socioeconomic status (SES) were virtually nonexistent with respect to mathematics and general knowledge performance but were apparent with respect to English language performance. On the other hand, the association between child SES and English language performance was at about the same level (0.12) as the association between SES and nonverbal ability on the Raven's Progressive Matrices test (0.16) (Heyneman 1976: 46).

The reasons for the modest associations began to appear in 1979. Measures had been taken of a child's self-confidence. A child's self-concept is normally associated with a child's socioeconomic status (Battle and Rotter 1963; McPartland and Cummin 1958; Gordon 1971; Runciman 1969; Barber 1957) but not in Uganda. Contrary to findings from industrialised societies that had long been industrialised, no inter-relationships emerged between a Ugandan child's self-confidence and parental SES, and none appeared once controls were placed on gender and ethnicity (Heyneman 1979). This finding provided the first theory to be developed, which held that the spread of modern occupational differentiation in Uganda, with its hierarchical layers of government ministers, teachers, clerks, bus drivers, export farmers and traders, are all very recent differentiations by comparison to most societies in Western Europe and North America. It was speculated that such recent economic stratification might profoundly affect the formation of attitudes because even among the wealthiest elites, families commonly included illiterate

members (Fallers 1964; Peil 1968). Unlike their occupational counterparts in Britain or North America, Ugandan bank chairmen, university professors, authors and presidents had numerous relatives who had never attended school, who were poor, and with whom they interact socially, often in the same house or compound. The experience of having respected but illiterate elders was not lost on the children of the elite. Even those at the highest levels of social differentiation tended to be an early generation that may have militated against privileged children, acquiring the feeling that top economic positions were entrenched in the hands of an elite who had passed their privilege down across generations. In this way, though differences in wealth were indeed apparent, these did not constitute the ingredients of a social class, and hence social differentiation had little impact on a child's academic performance. This is illustrated by Figure 12.1 below.

In terms of occupational attainment, in the United States the most important influence is SES (Jencks et al. 1972), but the opposite appeared to be true in Uganda. In Uganda, the most powerful predictor of occupational attainment was a child's performance in school (Currie 1977). What was startling about Ugandan school children in the early 1970s was not their low occupational expectations but the apparent irrelevance of SES to their aspirations. Ambitious children of both cabinet ministers and peasants knew three things perfectly clearly: (i) they knew that occupational success depends upon meeting the minimum educational entry requirements beyond primary school; (ii) they knew that only 10% of those who sat for the primary school leaving exam could be offered a place in a secondary school; and (iii) they knew the exam was graded by a computer, not a person. In other words, they considered it to be fair. Although in North America and Europe, examinations and standardised tests may be treated as a subtle way of restricting access of the poor to exclusive forms of training and occupational prestige, to the children in Uganda, the achievement test was one of the few universalistic sources of judgment available. While the test terrorised everyone, it did not terrorise the children of the poor any more than the children of the rich (Heyneman 1979).

But were these Ugandan findings an outlier? Were they in a category by themselves, or did their characteristics and explanations have parallels in other parts of the world? The first approach to that question was released in 1976. The Ugandan results were combined with those of the IEA test results in science that had been released three years earlier and were then combined into a single model showing the influence of SES and the effects of the school. In effect, it appeared as though there might be a pattern. The portion of the explained variation

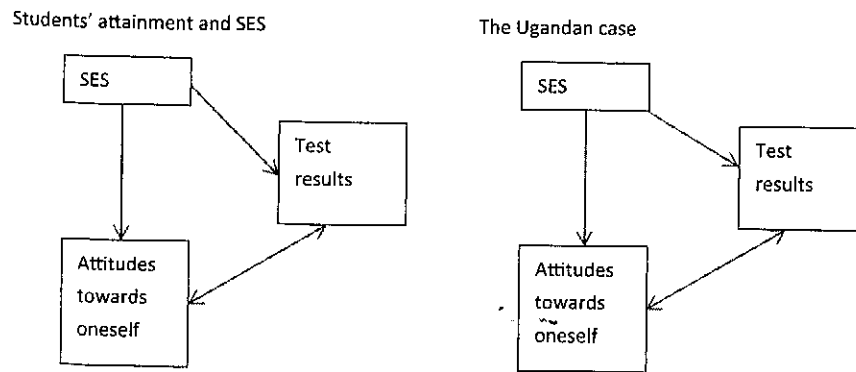


Figure 12.1 Relationship between SES, attitudes and academic performance among students characterised by social class divisions and students in Uganda in 1972

Source: Adapted from Heyneman (1979).

in achievement attributable to school effects was 31.7% in Uganda, 33.3% in India and 52.9% in Iran but only 16.4% in Scotland, 10% in Japan, 15.5% in England and 19.4% in the United States (Heyneman 1976: 208; 1977). This suggested that there might be a general rule that in low-income countries, the patterns of school performance and the statistical strength of the differences in school facilities might be higher and the strength of SES and other inherent characteristics might be lower.

Six years later my colleague, William Loxley, and I were able to test the question more systematically. First we experimented with a more accurate fit with respect to using the data on school quality. Instead of setting a minimum beta coefficient necessary for any school characteristics to enter the regression equations, we set a minimum standard for the data on school characteristics in each country separately. The strength of school characteristics was considerably enhanced as a result. These findings were released in 1982 (Heyneman and Loxley 1982). We then utilised this new method of winnowing the many school influences down to those most meaningful in each country with several new sets of surveys we collected, surveys from Egypt and Latin America. In all, we had comparable information on 29 countries. These results were released in 1983 (Heyneman and Loxley 1983a, 1983b). In essence, we found that the statistical power of school resources to influence academic achievement was considerably greater in the lower income countries and that the statistical power of SES to influence academic achievement was considerably greater in the higher income countries.

The effect of this finding was later summarised by Baker, Goesling and LeTendre:

The Heyneman/Loxley effect (H/L effect) challenges the uniformity of what had previously been thought of as a consistent pattern across both associations, namely, a smaller association between school factors and achievement compared with a larger association between family SES and achievement. . . . Heyneman and Loxley show instead that the established pattern of larger family SES effects with smaller school effects occurs mostly in economically developed nations, while the reverse – smaller SES effects with larger school effects – occurs in less-developed nations. Specifically, in the 1970s, in nations with lower GNP per capita, school effects accounted for between student variation in achievement than did family SES.

(Baker, Goesling and LeTendre 2002: 293)

As experience was gained, so were our explanations as to possible causes. One was the possibility that the findings were a statistical artefact. We tested for multicollinearity between school quality and social background, tighter selectivity of students from lower social backgrounds because of higher rates of school dropout, and lack of variation in social background. But none of these proved viable as explanations. It was noted that the economic returns to schooling were highest in the low-income countries (Psacharopoulos, Tan and Jimenez 1986; Psacharopoulos 1994); it was reasonable to think that because the opportunity for school was more scarce, its value was enhanced, and the demand for education was both high and spread more evenly across social groups. It was possible that in countries with lower incomes, the lack of primary and secondary school as a youth precludes opportunity later in life. Scarcity creates competition for school places and is well understood in both high- and low-income families. The aggregate upward mobility in low-income countries may be small, but the key may not be the aggregate upward mobility but rather the role of the school in permitting what mobility may be available. There was evidence that the influence of schooling on occupational mobility may be higher in low-income countries (Schiefelbein and Farrell 1982; Currie 1977; Fry 1983; Heyneman 1980b). To be sure, structural handicaps existed: education was not free of private cost; there

was incomplete primary and secondary schooling in rural and outlying areas, and school quality varied between rich and poor, urban and rural communities (Krutikova, Rolleston and Aurino 2014) and the influence of school quality may have followed students who migrated to areas with more opportunity (Gould, Lavy and Paserman 2004). And in all societies, particularistic influences – friends, family, ethnic fraternity – would be given frequent favour in the labour market. There was no society then, nor any today, in which it can be said that occupational mobility is determined by merit alone.

The issue was not just the degree to which a society is meritocratic. Some have suggested that the difference may lie in the degree of cross-status group clarity of the importance surrounding selection and exit examinations (Bishop 1995, 1997, 1999). Instead the issue may reside in the differences in the child-rearing patterns of high- and low-status families. Substantial differences have been documented in the child-rearing patterns in high-income countries and with respect to their attitudes toward schooling (Bulcock, Clifton and Beebe 1977). Perhaps in low-income countries, there may be a higher degree of acceptance of education's functions and a more uniform aspiration among all families to utilise education for social mobility. This consensus about the importance of education may explain why the educational 'push' that children feel from their homes is not as tightly determined by the education or occupation of their parents. In low-income countries, the 'push' was certainly not equally strong from all homes, but the desire for a place in school and the pressure on students to do well on examinations might not have varied as markedly on the basis of SES; hence, the influence of SES to affect school performance may have been less in low-income countries (Heyneman and Loxley 1983a, 1983b).⁴

The H/L effect: challenges and reanalyses⁵

Challenges to these findings came quickly. In a study of secondary school students in Zimbabwe, Riddell used multilevel methods of organising the data and found that social background was more powerful than school quality in the prediction of academic achievement (Riddell 1989a, 1989b). She comments on Heyneman and Loxley by saying that:

[O]ne is struck by their insularity and how much they are like the first wave of research in industrialised countries. There is still a preoccupation with the division of variance into school vs. home . . . the research is heavily economic relying on production function type of approach to data that are most easily quantified, rather than the most educationally significant. . . . There are strong grounds for skepticism concerning the differences between developed and developing countries which Heyneman emphasises related to the effect of background factors on educational achievement . . . his theory remains unsubstantiated due to the extreme methodological weaknesses exposed here.
(Riddell 1989a)

In the reply (Heyneman 1989), it was pointed out that criticising us for not using multilevel methods instead of ordinary least squares was like attacking Charles Lindbergh for not using radar, a technology which had not yet been invented. While multilevel methods do indeed offer a new way to organise data and Riddell's results did differ from our own, it was not necessarily the case that our data were incorrect. Nor is it the case that past research was monotheistic in terms of techniques. We used anthropological analyses to better understand the management of schools (Heyneman 1975); we used achievement gain scores as opposed to cross-sectional scores to differentiate hypothesised as opposed to real changes in learning (Heyneman and Jamison 1980); we used pupil affiliation with schools as opposed to

school inputs to overcome the misspecification of school and teacher measures (Heyneman and Jamison 1980); and others at the time used time-series data, discrimination analysis and cross-tabulations to ferret out the possibilities of errors in interpretation (Schiefelbein and Farrell 1982) and path models to incorporate changes in the labour market over time (Farrell and Schiefelbein 1985). Perhaps most importantly, we tried to test the theories of school effects with experiment/control studies instead of cross-sectional surveys. In some ways, these experimental studies were superior to the multilevel analyses in that students either had the experimental input or they did not. The effect was therefore likely to be clearer and less implied. These studies suggested that the power of improved school inputs to improve school achievement was highest where school quality had previously been the lowest and in the least developed countries of the world (Heyneman, Jamison and Montenegro 1984; Jamison et al. 1981). The intervention of textbooks in the Philippines constituted an illustration. With a nationwide investment that improved the average textbook availability from 10:1 (students/book) to 2:1 (students/book), performance increased in the nation at large by one-third of a standard deviation in Grade 1 Pilipino and by almost one half of a standard deviation in Grades 1 and 2 science. The levels of achievement attained by only 50% of the student population was, one year later, achieved by 69% of the student population of eight million children. The equivalent achievement impact in the United States would have required a reduction of class size from 40 to 10 students/class (Heyneman, Jamison and Montenegro 1984: 143).

A decade later, Riddell's criticisms were reanalysed, and each proposition was retested. In 2009, Chudgar and Luschei mention that:

[W]hile a few individual country studies have used hierarchical models to decompose variance, this approach has not been adopted systematically for multi-country data . . . and in general the models show a similar outcome in terms of countries where schools matter more or less.

(Chudgar and Luschei 2009: 635 and 644)

Baker, Goesling and LeTendre conclude that:

HLM has not uncovered larger school effects in wealthy nations like the United States than the older ordinary least square (OLS) methods did . . . and we doubt that that HLM's use would have uncovered significantly larger school effects in wealthy nations than was reported by the 1970's OLS estimates . . . we think it unlikely that these issues invalidate the H/L effects in the 1970s data.

(Baker, Goesling and LeTendre 2002: 308)

Perhaps the HLM lesson is worth reiterating. A new method, while important, is no substitute for the obvious. No academic debate, no new software, no new statistical technique that considers the relative importance or unimportance of school quality negates what is perfectly obvious to every minister of education and every parent, including those of low SES and particularly those in low-income countries. They want more and better education for their children, and they will sacrifice a great deal to keep children in school. While one may argue the relative importance of one effect versus another, such arguments are irrelevant in the world of immediate policy where the most relevant questions are how to raise the availability of school quality inputs and how to distribute them more fairly. No one seriously argues that school inputs should not be raised because academic performance is affected by the conditions of the home.

Other criticisms centred on the validity of the socioeconomic measures used in low- and middle-income countries (Theisen, Achola and Boakari 1983). However prevalent these criticisms were thirty years ago, the fact remains that measuring SES by a combination of parental education and wealth has become the standard method ever since. Moreover, the question of bias in the H/L effect because of the invalidity of the SES measures was dismissed by Baker et al. in their reanalysis. They pointed out that:

[T]here is no evidence of such bias in the Heyneman and Loxley work. To the contrary, Heyneman and Loxley speculate on issues of more restricted variance in family background in the poorer nations but offer a number of plausible tests to indicate that their effect is not a statistical artefact of this.

(Baker, Goesling and Le Tendre 2002: 309)

Other reanalyses and retests of the H/L theory have come in different categories. Some utilised regional or national data to test the degree to which home background influenced school achievement in the Philippines (Huang 2010), sub-Saharan Africa (Zumbach 2010), the Middle East and North Africa (Bouhilila 2014), Latin America and the Caribbean (Cervini 2012) and China (Xuehui, Hannum and Sargent 2007; Jiang 2006). Others have used more global data to inquire as to which school characteristics might be more significant in predicting achievement (Illie and Lietz 2010; Fuller 1987; Sandoval-Hernandez and Bosco 2010) or the degree to which learning might contribute to economic growth (Breton 2011; Fangsheng 2006; Bils and Klenow 2000; Cohn and Soto 2007; Hanushek 2006; Hanushek and Wössmann 2008, 2009, 2011; Jamison and Hanushek 2007).

However, the most systematic reanalysis of the Heyneman/Loxley effect was released by Baker Goesling and Letendre in August 2002. They were able to take advantage of the newly released results of the Third International Mathematics and Science Study (TIMSS) and hence were able to utilise data from over 36 countries, 20 of which had not previously been included in the H/L analyses.⁶ Their interest was not solely concerned with the influences on learning; they were focused on whether the patterns of performance might have changed between the original results in 1983 and their results in 2002 as a result of the massive increase in access to education in the interim. Here is how they put it:

In the time since the (H/L) findings were reported 25 years ago, the world has seen intensified political and economic investment in access to education and in organisational quality, and this intensification has ramifications for the way that educational stratification is organised in nations . . . the question is to what degree does national economic development influence the social reproductive process of schooling through human capital reproduction in schools?

(Baker, Goesling and Le Tendre 2002: 292)

Essentially Baker, Goesling and Le Tendre were interested in testing two of the theories suggested in the 1983 article. The first concerned the degree to which school scarcity influences its value. They hypothesised that as schooling becomes less scarce, its value might decline, hence the pattern of performance might change. The second concerned the nature of social stratification. They hypothesised that as national economies develop they may begin to resemble each other, and this may influence the importance of SES in the prediction of academic achievement.

The findings of Baker, Goesling and Le Tendre are very important. They find very little evidence of the H/L effect in their data and conclude that the H/L effect had declined over time. They suggest that their findings:

[D]emonstrate how the institution of family and school interact over time because of changing macro-social conditions. As formal schooling increasingly becomes the single most powerful channel for reproduction of family status, the incorporation of family as an institution into schooling as an institution also increases . . . this shifting HL effect indicates the dynamic, symbiotic relationship between these two institutions. . . . Investment in mass schooling by nation-states and multilateral agencies, backed by an ideology of providing some minimum level of school quality throughout the nation, has shifted the potential toward greater family SES effects in the social stratification process. The macro-process of mass schooling across a large part of the world may have achieved a resource threshold in the quality of schooling and be a very plausible explanation for a shifting H/L effect over time.

(Baker, Goesling and Le Tendre 2002: 310)

Diminishing marginal returns?

As nations develop economically, the question of whether school effects systematically diminish has been taken up by several economists. Hanushek and Luque (2003) asked whether investments in low-income countries may have a larger effect because of the lower levels of classroom and other inputs. However, they did not find a constant change in effects. Harris (2007: 48) suggests that this might be due to the fact that they assumed constant return to scale within countries as well as between them. Harris uses a different set of functional forms to test the existence of diminishing marginal returns (DMR) but concludes, again, that no significant DMR could be found. He says:

Using three different tests there is little evidence of DMR within countries, either for school inputs as a whole or for individual inputs such as teacher education. While the evidence is more supportive of DMR across countries, the possibility of constant returns cannot be rejected . . . the discussion here of the various tests for DMR in the present provides some direction about how these tests might be carried out given the influence of the Heyneman/Loxley result and related types of studies on the design of educational policies.

(Harris 2007: 48)

Difference in the nations sampled?

Baker, Goesling and Le Tendre raise several important possibilities as to why the H/L effect cannot be found in 2002. One concerns the possibility that the nations that appear in their sample are wealthier than those that appeared in the original H/L sample. As they put it:

[C]ompared with the 1994 sample of nations, the 1970s sample of nations includes more poor nations from Latin America, where educational inequality tends to be high and involve widespread private schooling for elite families.

(Baker, Goesling and Le Tendre 2002: 311)

Is it possible that the H/L effect had not disappeared but was not evident 25 years later because of a change in countries from which data were collected? This is among the questions asked by Gamoran and Long. They point out that by comparison to the world average, the level of national wealth in the Baker, Goesling and Le Tendre sample (US\$17,429 per capita) was 300% over the world mean whereas the level of national wealth in the Heyneman/Loxley sample (US\$2,896) was about 50% over the world mean (Gamoran and Long 2007: 33). Could that explain the absence of the H/L effect?

To test this question, they took the same countries that appeared in the Baker, Goesling, and Le Tendre sample and added data taken from ten countries in Latin America.⁷ They then ran regressions in the same manner as Baker, Goesling and Le Tendre. But their results were quite different. With the per capita income more closely resembling the original Heyneman/Loxley sample, the portion of variation in academic achievement explained by school quality was significantly increased. While school effects in the Baker, Goesling and Le Tendre sample could account for 34.4% of the explained achievement variance, and the Heyneman/Loxley sample could explain 50.5%, school effects in their sample could explain 56.7% (Gamoran and Long 2007: 33). This is summarised in Table 12.1.

Gamoran and Long also retested the DMR hypothesis and found that the DMR was not constant but that there was a threshold effect. At about US\$16,000 per capita, the variance that could be explained dropped from 31% to about 9%, suggesting that models utilising a threshold effect are significantly better fits. They summarised their work by saying that:

International evidence shows that school resources do have a strong effect on academic achievement for the poorest countries. This result suggests that the Coleman report finding of a limited association between school resources and achievement once family background is controlled holds only for countries that have passed a threshold of basic resources and experience a diminishing (though non-zero) marginal return to additional school resources.

(Gamoran and Long 2007: 36)

The influence of inequality?

But is it only a question of economic development? Are there not other factors that might account for the continued existence of an H/L effect? After all, eight countries in the Baker, Goesling and Le Tendre sample were either from the post-Soviet Union or from Eastern and Central Europe where school systems were widely known for equality in the distribution of school resources (Heyneman 2000). Baker et al. express the concern that the lack of countries from Latin American in their sample might have affected their results. Countries in Latin America

Table 12.1 Comparison of H/L effect examples: per capita income and school effects

Sample	Per Capita Income (US\$)	School Effects (% of Variance Explained)
Heyneman and Loxley	2,896	51
Baker, Goesling and Letendre	17,429	34
Gamoran and Long	3,409	57

Source: Adapted from Gamoran and Long 2007: 34.

are known to have problems of inequity, including in the distribution of school resources. Perhaps the limited access to data from Latin America might have depressed the measured effects of school resources (Baker, Goesling and Le Tendre 2002: 311).

The Geronzi and Long sample, on the other hand, included many countries in Latin America that are known for significant inequality in the distribution of school resources. The 1994 sample, they point out, “includes more poor nations emerging from the former Soviet bloc, where there is some evidence that educational resource inequality is relative low and elite private schooling is rare” (Baker, Goesling and Le Tendre 2002: 311). Could inequality influence the degree to which school quality affects academic achievement?

The inequality hypothesis was systematically addressed by Chudgar and Luschei (2009). They wondered if:

[G]reater inequality in school resource distribution in the original H/L sample may have strengthened the statistical power of school resources to predict achievement, thereby enhancing the H/L effect. If inequality influences the relationship between national income and the impact that schools have on achievement, then failure to consider inequality differences in country samples may lead to inaccurate conclusions.
(Chudgar and Luschei 2009: 634)

Inequality may be evident in the distribution of school resources or in the larger distribution of personal income and wealth. If there is high inequality in wealth but low inequality in school resources, then schools may help ameliorate the lack of privilege associated with having a lower SES. On the other hand, if school resources are distributed inequitably in a country where wealth is also distributed inequitably, then the school system might be classified as having a ‘privileged student bias’ (Chiu and Khoo 2005; Chudgar and Luschei 2009). The question is whether either distribution affects the results of accounting for the variation in academic achievement.

Chudgar and Luschei used school fixed effects in their OLS results and total school variance in the HLM results, hence they are not able to distinguish among school systems with less equality in the distribution of individual school resources. Their results suggest that school effects tend to be stronger in low-income countries and more important in the poor countries but may be especially important in counties with high levels of income inequality. They summarise their results in this way:

By quantifying the variance attributable to schools, we find distinct patterns indicating that schools are more important in poor countries. . . . Prior studies have ignored the role of income inequality. Lack of variation in access to resources should lead to relatively lower importance of school factors in more equal countries. Our analysis shows that in fact, school resources are more important in unequal countries. . . . Our findings argue for a consistent government role in insuring equitable and adequate schools, especially in poor and unequal regions. Focusing on low-income students in unequal regions may be a particularly high-yield strategy for directing scarce educational resources.
(Chudgar and Luschei 2009: 651 and 653)

Student motivation?

To date, the discussion has concentrated on quantifying school inputs and school effects. Comparatively little attention has been paid to the interaction within families, the kind of interaction

that might affect a student's motivation. There is a tendency to assume that interactions occur in ways parallel to middle-class homes in Europe and North America, namely that parents with more education tend to spend more time and give more attention to the cognitive development of their children. This is supported by the finding that the impact of socioeconomic status is greater with younger children who are in the home longer and may be less affected by influences from outside the home (Blossfield and Shavit 1993: 9).

Aside from knowing that parents may have completed comparatively more education, the question remains as to what constitutes the ingredients derived from families whose children perform well on tests of academic achievement. Some suggest that it might be entrepreneurialism (Wössmann et al. 2009). Others have suggested that it may have to do with family values toward schooling (Chiu 2007). Chiu and Chow (2011) suggest that the differences in family values are evidenced by the level of classroom discipline around the world. In their pioneering study, they find that classroom discipline differs systematically and that:

[I]n poorer countries classroom discipline was higher . . . unlike academic achievement, classroom discipline does not necessarily improve as a country's economy grows. . . . Because weaker classroom discipline is evident in richer countries, this negative link opens up new avenues of research, raising the possibility that other psychological aspects of schooling (e.g., social relationships, sense of belonging at school) might be worse (or better) in richer countries.

(Chiu and Chow 2011: 529)

The Heyneman/Loxley effect: a summary

In sum, we have discovered several things. Even after new tests and new methods, the pattern of socioeconomic status effects is nowhere near uniform. This is illustrated in Figure 12.2 and Table 12.2. Figure 12.2 illustrates the fact that the effect of family background in predicting math and science achievement is highly variable even within wealthy countries.

The same variability in the 'achievement gap' in reading scores based on family wealth is illustrated in Table 12.2. For instance, in Luxembourg, Portugal and Germany, the gap is greater than five times what it is in Finland and the Netherlands.

Why does the achievement gap vary even among wealthy nations where schooling is universally available? In countries where there is a high level of social cohesion, there is little variation in the desire for schooling between rich and poor families. In those environments – Korea, Japan, Canada, Netherlands, Finland – there is more classroom discipline, a lower achievement gap and higher average achievement. Not only does this occur in certain countries but also within particular subcultures (high- and low-income Jewish and Mormon families for instance). It may occur in countries that are faced with exogenous economic and social challenges (Sahlberg 2011). It may occur within countries where schooling is uniformly seen (by rich and poor alike) as being the single most important avenue of social mobility (Heyneman 1979, 1985; Furnham, Kirkcaldy and Lynn 1996).

The question at the end concerns both social background as well as school quality. In terms of social background, it may be the case that pupils have to want to learn in spite of poverty and the handicaps of the home (Bishop 2006). It is normal for impoverished children to want to learn in many parts of the world, and classrooms, even with high pupil/teacher ratios, are more peaceful. Children are uniformly ready, even anxious, to learn before the teacher even enters the classroom.

On the other hand, in those countries where classroom discipline is a major handicap to teachers and teaching, no new curriculum, no new teacher training, no new pedagogy can

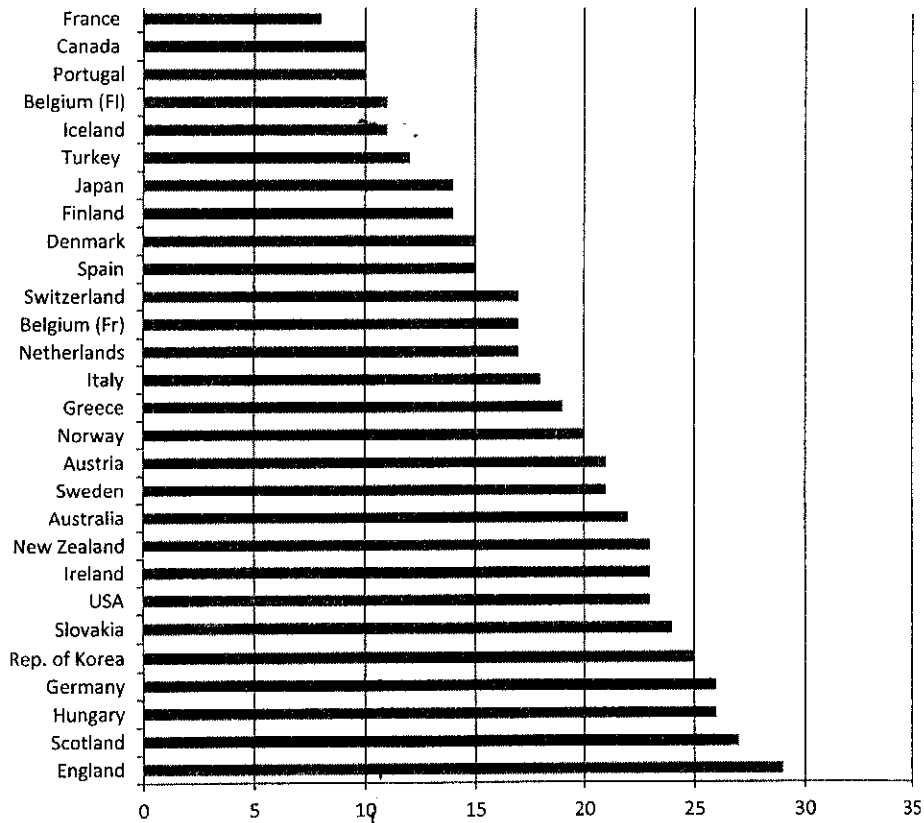


Figure 12.2 Family background effects in different countries

Notes: Coefficient estimates from a student-level regression within each country of the mean of math and science performance in the TIMSS-95 and TIMSS-Repeat international tests on books at home, which is a categorical variable with five categories. Regressions control for age, gender, family status, student born in country, mother born in country, father born in country, interactions between the three immigration variables and books, and a dummy for the second test cycle. All estimates are statistically significantly different from zero at the 1% level.

Source: Adapted from Hanushek and Wössmann 2010.

overcome a class of children who are not ready to learn. What some public and charter schools do to overcome this is to re-create a culture of initial obligations, a culture which, until recently, was universal (Heyneman 1999). They create what Edward Shils (1981) describes as a tradition, "a massive presentness" over which a minor child has no choice except to try hard.

Where there is a tradition of valuing education, a child will have no choice of wanting to attend school or trying hard in school. The source of the problem is wherever a child is allowed to have this choice. Because having a choice of attending school or trying hard in school is associated with low SES families in some high-income countries, many assume that poverty must be the cause of the gap in achievement. However problematic poverty may be, it is not the cause of lower achievement among the poor. The cause of lower achievement among the poor is the comparative disregard for those who have sacrificed to make it possible for them to be educated. This includes a disregard for both the 'elders' in their own families as well as the general public.

Table 12.2 Differences in reading scores by family wealth in PISA 2007

Luxembourg	8
Portugal	6.7
Germany	5.2
France	4.5
Spain	3.1
Belgium	3
Austria	2.6
UK	2.6
Sweden	2.4
Denmark	2.3
Italy	2.1
Greece	2
Ireland	1.7
Finland	0.9
Netherlands	0.2

Source: Adapted from Gorard and Smith 2004.

Where cultures require every child to desire schooling, there is a lower achievement gap. The question is whether what pertains in those societies can be re-created elsewhere. I think it can.

About school effects we also have learned a great deal. The fact is that school quality varies considerably from one country to another, and the difference is roughly associated with GNP/capita (Heyneman 2004). But we have also learned that we should not hold schools or school teachers responsible for only a small fraction of their professional responsibilities. Since the beginning, the purpose of public schooling has been to create well-balanced adults with a variety of lifelong interests who act as responsible citizens (Heyneman 1999; 2000, 2005). It may be more difficult to quantify, but this makes its assessment no less important to emphasize. Some have called for an emphasis on subjects other than mathematics, science and reading. These might include civics education, foreign languages and technical skills. A broader approach might include noncognitive skills, attitudes of self-worth, or social responsibility (Hanushek and Wössmann 2010: 54).

What we know is that these large-scale tests of academic achievement will be more common in the future; they will include cities and states as well as nations; they will include tests over time, tests with experiment and control groups, tests that emphasize problem solving as well as information retrieval. But regardless of how important these new arenas become, they will not eliminate the importance of schools and school effects. After three decades of debate, that issue is settled.

Notes

1 A similar report was issued in the United Kingdom at about the same time with parallel conclusions (Central Advisory Council for Education 1967; Kogan 1987).

2 See <http://www.iea.nl/>

3 The impetus for a new test originally came from Britain, whose minister of education could not wait a decade for the necessary achievement results on which his government depended.

4 What did James Coleman say about the H/L effect? This is described in Heyneman (1997).

5 According to Google Scholar, the original article (Heyneman and Loxley 1983b) has been cited 777 times with about 25 new citations appearing/year.

- 6 Latvia, Lithuania, Romania, the Russian Federation, Slovakia, the Czech Republic, Slovenia, Korea, Greece, Portugal, Spain, Iceland, Ireland, Cyprus, Austria, Denmark, Hong Kong, Singapore, Switzerland and Kuwait.
- 7 Honduras, Bolivia, Dominican Republic, Paraguay, Columbia, Brazil, Venezuela, Chile, Mexico and Argentina.

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