



**Education, Training and their Enabling Environments:
A Review of Research and Policy**

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EXECUTIVE SUMMARY

This paper focuses on the need for education to be embedded in a wider environment of a particular kind - for its expected social and economic impacts to be most evident. It explores, as a case study of this relationship, the extraordinarily long life of one of the most well-known policy claims in the whole sphere of international education and training - that four years of education increase agricultural productivity (cf. Lockheed, Jamison and Lau, 1980). But it also looks more generally at the role of the enabling environment for education and skills development to reach their full potential.

The original policy attractiveness of this case study research was doubtless because it claimed a connection between education and increased farmer productivity. This was particularly attractive in the World Bank at the time as the Bank wanted to make the case that investment in education was not simply a consumption good or a human right, but that it also translated into economic growth. The same research is now used, far beyond the Bank, to demonstrate the impact basic education has potentially on poverty reduction.

The paper re-examines these particular connections, noting the way that this particular research finding has been translated into policy documents over the last 25 years, but its authors are also interested in a second, and much more general parallel of this early research which has been little analysed – the crucial link between basic education and its surrounding or enabling environment. This concept of the environment includes both, within the education sector, **the whole post-basic education and training system**, but also the wider **non-education environment** (for example, macro-economic growth, job creation, good governance, and the availability of credit and agricultural inputs).

The paper first explores what we term, the ‘farmer education fallacy in development planning’, by looking at the origin of the famous farmer education claims just mentioned and seeing how these claims have been used since then in agency and academic policy. It then explores this issue of the need for education to be embedded within a wider environment more generally. This discussion examines the need for a sector-wide ‘post-basic education and training environment’ - beyond primary schooling, on the one hand, and the importance of the wider ‘non-educational environment’ on the other. It also discusses some of the links between the existence of a post-basic education system and this wider enabling environment.

The ‘farmer education fallacy in development planning’

We are not examining this renowned World Bank finding because we necessarily doubt the evidence on which it is based, but rather, because the research results have so frequently been oversimplified or misrepresented by those who have used them. Versions of this finding - that four years of education increase agricultural productivity - are quoted, for example, as recently as the Education For All (EFA) Global Monitoring Reports [GMR] of 2002 and 2003, and also in the ILO volume from the 91st session of the International Labour Conference. But these are really misquotations; the original research said education makes a difference to farm productivity of about 10% in ‘a

modernising environment'.¹ Education makes virtually no difference, the research argued, if the environment is nonmodern [where agriculture is traditional and where there are no new methods and new crops being tried out]. If the above finding - that four years of education increase agricultural productivity - is used without a reference to the crucial importance of the economic context or environment, there is a danger of misleading the reader. In other words, if the education is to make a difference to agricultural productivity, this particular research asserted, certain other things needed to be in place in the surrounding environment.

Moreover, the research on farmer education and efficiency provides a dramatic case of how the original research evidence can be stripped of caveats and context, hence resulting in the mis-representation of the research findings in later policy documents.

The Policy Impact of the Farmer Education Research

The Lockheed et al research, which explicitly stated that education is more effective in modernizing conditions, points to the fact that education (or literacy), **on its own**, may not be sufficient to result in positive developmental outcomes. This is a very simple message, but it is exactly the opposite of what many agencies derived from this World Bank research. They chose to represent the research in an 'edu-centric' way – to suggest that education itself has this kind of impact. Although, as we shown, this core message of the research has often been misrepresented or oversimplified, as it was taken up and translated into policy by the World Bank, development agencies, and NGOs, and as it became accepted in the academic literature, it nevertheless sought to make an important contribution to understanding the role of education in relation to its surrounding contexts.

Education and its Two Enabling Environments

Our paper takes the suggestive concept of the surrounding or enabling environment - from the Lockheed et al research – and develops it both in relation to the wider educational environment and then to the environment beyond the school and the vocational training system. We argue that the concept of the enabling environment is much more complex than the simple dichotomy between modernizing or stagnant, in economic terms, with which we engage in the first part of this paper. Many other dimensions of the surrounding environment determine whether the investment in basic education will be productive.

We argue that there are, in fact, two main types of surrounding environment that that could catalyse the linkage between basic education and positive developmental outcomes. One might be termed a 'post-basic education and training environment', while the other would be an environment that is outside the education system itself, such as the character of the macro-economic context, or in other words, 'the wider non-educational

¹ Referring to a context where there were 'new crop varieties, innovative planting methods, erosion control, and the availability of capital inputs such as insecticides, fertilizers, and tractors or machines. Some other indicators of [a modern] environment were market-orientated production and exposure to extension services'.

environment'. Thus, secondary and tertiary education, and (formal and informal) skills development all form part of a post-basic education and training context or environment which may well be required to be substantial and accessible in order to make primary or basic education fully effective. This means that post-basic education and training may themselves be a part of the essential enabling environment for basic education. Alongside this, and equally crucial, there is the need for a 'non-education related environment' if education, in all its sub-sectors, is to deliver its full developmental impact.

The interplay between these two kinds of enabling environment is highly complex, especially since, as we argue in the paper, the post-basic education and training system has itself a direct impact on these non-educational environments. We discuss educational and non-educational environments in turn. We argue, along with Lockheed et al, that there are crucially important differences in the environments which surround basic schooling. In doing so, we are not synthesizing a series of quantitative studies, as Lockheed et al did. Rather we examine and tease out the shifts in education and development policy, which seem as much to be based on experience and on commonsense as on the review of state of the art economic research. For instance, we note that the terms which Lockheed and others used – stagnant and modernizing – could be applied to the school system itself. In other words, does investment in basic schooling provide all the well-known development benefits if the school system is of abysmal quality, and if teachers are uncommitted and frequently absent. To explore these and other issues we examine the synergy between basic education and the wider educational environment beyond the primary school.

Conclusion on a two-way relationship of education and training with their enabling environments

In research terms, what is intriguing about the argument for seeing education against a background of change in other sectors in the wider environment is that, like the case for the necessary interaction of primary with post-primary education, the policy is not research-based.

It is not just a question of there being more or less influence of education depending on modernising/stagnant or egalitarian/non-egalitarian environments or of education aspirations being determined by external factors – all of which are one-way relationships. More likely basic education – and particularly post-basic education and training - may itself play a part in whether an environment is actually ready to absorb change or is open to new technology, or is critical of poor governance.

Our paper argues that the process of assisting a country to reach the Education Millennium Development Goals [universal primary education and gender equity] may well require an understanding of two other enabling environments – that of the education and training system itself, and especially the dynamic interaction of primary with post-primary provision, - and also the interaction of education as a whole with change in the larger economy. The policy of single-mindedly targeting just one sub-sector, such as

primary education or girls' education, in order to reach these education goals may well be inadvisable.

We argue that the politically attractive claims that schooling directly 'make a difference' to agricultural productivity need to be qualified in two ways. First, these allegedly developmental effects of schooling are almost certainly dependent on other facilitating conditions being present – in the social, cultural, economic and political environments. And, second, these powerful impacts claimed of education are unlikely to be present – even in environmentally promising conditions – if the quality of the schooling or of the skills training is of a very low quality. Commonsense would suggest that a school affected by massive teacher absenteeism and low morale can have little impact on other developmental outcomes.

If, in conclusion, there is to be new research on the issues that we have explored in this paper, then it will need to begin to explore new ways of capturing the crucial role of the enabling or disabling environments in affecting how education and training are actually utilized. This will not be a question of reproducing more research like that of Lockheed, Jamison and Lau, valuable and influential though this was in its day. Rather, it will need to move from the 'edu-centricity' of such research towards work that will capture something of the complexity of the social, economic, cultural, legal and political environments in which education and training investments are constantly being affected.

This will not be research, therefore, that measures how education and skills can help break the cycle of poverty or how a certain threshold of secondary education can assist a transition to the brave new world of the knowledge society. But it will be research that will need to develop new tools and artifacts that capture the complexity of the wider environment, while bearing in mind, also, that school and skill are much more than years of education.

Further Reading.

Lockheed, M., Jamison, D. and Lau, L. (1980) Farmer Education and Farm Efficiency: A Survey, in *Economic Development and Cultural Change* 29, 1: 37-76, reprinted as World Bank Report Series No. 166, World Bank: Washington.

The full paper – 'Education, Training and Their Enabling Environments: A Review of Research and Policy' is available on the Centre of African Studies (Edinburgh) website on www.cas.ed.ac.uk/research/projects.html. It is part of the DFID-supported project on post-basic education and training for poverty reduction. This summary and the longer paper reflect the views of the authors – and not of DFID.

EDUCATION, TRAINING AND THEIR ENABLING ENVIRONMENTS: A REVIEW OF RESEARCH AND POLICY ²

Introduction

This paper focuses on the need for education to be embedded in a wider environment of a particular kind - for its social and economic impact to be most evident. It will explore the extraordinarily long life of some research that has linked primary education to specific economic benefits. The original policy attractiveness of this research within the World Bank was doubtless because of the case it made that education had a very direct link to economic growth. The same research is now used, far beyond the Bank, to demonstrate the impact basic education has on poverty reduction. We shall re-examine these particular connections, noting the way that research translates into policy, but we are also interested in a second, and very different dimension of this early research which has been little analysed – the necessary link between basic education and its surrounding or enabling environment.³ This influential research, much of it done in the World Bank, is now more than 25 years old – but it keeps being re-affirmed in international meetings, and in both the academic and policy literature concerned with development. The findings have become so commonplace that the original sources are often no longer mentioned. Instead, it is simply asserted, for example, that four years of education make a difference to income - or that basic education, and especially girls' education, leads to smaller, healthier families. However, the research stands out as a very powerful reminder that education has very different impacts which depend on the surrounding context or environment. Moreover, the research on farmer education and efficiency provides a dramatic case of how the original research evidence can be stripped of caveats and context, hence resulting in the mis-representation of the research findings in later policy documents.

The paper will explore in particular the research origins of one of the most well-known policy claims in the whole sphere of international education and training - that four years of education increases agricultural productivity - and will examine how this research finding has been translated into and used in policy documents over the past 25 years. We are not examining this finding because we necessarily doubt the evidence, but rather, because the research results have so frequently been oversimplified or misrepresented by those who have used them. Versions of this finding - that four years of education

² The research has been undertaken as part of a UK Department for International Development (DFID) research programme on post-basic education and training and poverty reduction at the Centre of African Studies, University of Edinburgh. The views and opinions expressed are those of the authors alone. We would like to acknowledge, however, the time given to us by those officials we interviewed at the World Bank and UNDP in researching this paper. We would also like to thank our colleagues at the Centre of African Studies, including Neil Thin and Rachel Hayman for their comments. A short and very early version of this argument was made at the Development Studies Association, Annual Conference of November 2004, and was published in King, Palmer and Hayman, 2005.

³ This enabling environment for basic education includes both the wider non-education environment (for example, macro-economic growth, job creation, the availability of credit and agricultural inputs), but also the post-basic education and training system.

increases agricultural productivity - are quoted, for example, as recently as the Education For All (EFA) Global Monitoring Reports [GMR] of 2002 and 2003 (UNESCO, 2002; 2003), and also in the ILO volume from the 91st session of the International Labour Conference (ILO, 2002). But these are really misquotations; the original research said education makes a difference to farm productivity of about 10% in 'a modernising environment'.⁴ Education makes virtually no difference, the research argued, if the environment is nonmodern [where agriculture is traditional and where there are no new methods and new crops being tried out] (Lockheed et al., 1980a, b). If the above finding - that four years of education increase agricultural productivity - is used without a reference to the crucial importance of context or environment, there is a danger of misleading the reader. In other words, if the education is to make a difference to agricultural productivity, this particular research asserted, certain other things needed to be in place in the surrounding environment, - what we term "critical system capacities".

This is something that is perhaps very obvious but which had been missing in much of the long-running debate about the rates of return to education at different levels (see for example Psacharopoulos, 1973; 1980; 1985; 1988; 1994; Psacharopoulos and Patrinos, 2002) - that education needs to be embedded in a series of particular contexts or environments if it is to have the powerful effects that are so often claimed for it. There is, arguably, no automatic effect of schooling or training on improved agriculture, on reduced fertility, on later age of marriage, on reduced child mortality, on better health or on entrepreneurship; certain crucial things need to be present for there to be a virtuous circle of influence from educational investments.⁵

We should point out at this early stage that our paper is not questioning the position that basic education is a universal human right (see Colclough, 2005), but rather the way that a particular set of economic arguments about the impact of education have been used.

This paper will first explore what we might term, the 'farmer education fallacy in development planning',⁶ by looking at the origin of the farmer education claims and

⁴ Referring to a context where there were 'new crop varieties, innovative planting methods, erosion control, and the availability of capital inputs such as insecticides, fertilizers, and tractors or machines. Some other indicators of [a modern] environment were market-orientated production and exposure to extension services' (Lockheed et al, 1980a: 129; cf. 1980b: 55-56).

⁵ For an early discussion about the semi-automatic consequences of investing in primary education, see King (1987).

⁶ The phrase is drawn from Foster's 'vocational school fallacy in development planning' (Foster, 1965; King and Martin, 2002) which argues that pupils' aspirations and attitudes towards work and employment are not primarily the result of school curricula but of the surrounding economy and the work environment. A recent paper by King and Martin (2002) that revisits Foster's 'vocational school fallacy' commented that 'Today, it is not impossible if Foster were to examine the rapidity with which an international, political consensus has emerged in the last 10 years around the centrality of basic education to the eradication of poverty that he would be tempted to write instead on the dangers of "a basic education fallacy in pro-poor growth"' (King and Martin, 2002: 24). This suggestion was indeed accepted by Foster (2002), who added 'that education is only *one* of the factors associated with *economic* development. Over the last thirty years a formidable body of evidence has been generated to emphasize that it plays a major role. But I would contend that education is *not* the "prime mover" in economic change but it is a powerful accelerator *given an appropriate structural and institutional environment*. This caveat is absent from much of the current policy-oriented literature' (ibid: 28. emphasis in original).

seeing how these claims have been used since then in policy. It will then explore this issue of the need for education to be embedded within a wider environment more generally. This discussion will explore the need for a sector-wide ‘post-basic education and training environment’ - beyond primary schooling, on the one hand, and the importance of the wider ‘non-educational environment’ on the other. It will also explore some of the links between the existence of a post-basic education system and this wider enabling environment.

PART I: THE FARMER EDUCATION FALLACY IN DEVELOPMENT PLANNING

According to the World Bank, primary education is the single largest contributor to growth in developing countries. A farmer with four years’ schooling is much more productive than one who has no education. (ILO, 2002: 4)

Many studies have shown that schooling improves productivity in rural and urban self-employment. Early evidence suggested that four years schooling was a critical period. More recent work has suggested that additional years continue to make a difference. (UNESCO, 2002: 34)⁷

Female education has ‘positive effects on levels of agricultural productivity. This relationship has been well documented for many years [Jamison and Lau, 1982]’. (UNESCO, 2003: 30)⁸

The suggested direction for policy development in primary education is premised on the critical role that this level of schooling plays in a country’s economic and social transformation. Even in **traditional** agriculture, studies have shown that in most developing country contexts this modicum of schooling substantially boosts farmer’s productivity [see, for example, Lockheed, Jamison, and Lau 1980; Foster and Rosenzweig 1996]. (World Bank, 2003: 175. emphasis added)⁹

[Or simply...] Educated farmers are more productive. (Weale, 1992: 3)¹⁰

Statements such as these – that ‘four years of schooling make a difference to agricultural productivity’ have very often been cited over the last 25 years as one of the positive illustrations of the developmental impact of primary education. This is still very much the

⁷ The UNESCO publication cites the Lockheed et al. (1980) study directly (see UNESCO, 2002: 34, fn 18).

⁸ This UNESCO report, on gender, uses the Lockheed et al research, which never made any specific claims about *female* education and agricultural productivity, to argue the case for the importance of female education.

⁹ The referencing of Lockheed, Jamison and Lau appear in the original. We are grateful to Rachel Hayman of the Centre of African Studies, University of Edinburgh, for finding this example from Rwanda.

¹⁰ This World Bank *Policy Research Working Paper* in Education and Employment by Martin Weale - a product of the Education and Employment Division, Population and Human Resources Department - was part of a larger effort in the department to establish the linkages between human capital investments and economic development (Weale, 1992).

case today as several of the quotations above illustrate. This claim, in its many different versions, has been one of the single most influential and longstanding research findings in the education development literature. But where does this statement come from and does the research it was based on actually support a view that has become almost a policy axiom and a self-evident academic truth?

This assertion, that education has an impact on agricultural productivity, comes from research conducted by Lockheed, Jamison and Lau published in their 1980 article, 'Farmer Education and Farm Efficiency: A Survey'.¹¹ Lockheed et al (1980a, b)¹² synthesize the conclusions of 18 other studies¹³ (with a total of 37 data sets) from 13 countries in Asia, Africa and Latin America of the effect of farmer's education level on productivity in different economic environments.¹⁴ The authors concluded that on average¹⁵ 4 years of education result in a mean gain in production of 7.4%, with a standard deviation of 6.8% (1980a: 129; 1980b: 54).¹⁶

Lockheed et al examined whether education has a higher payoff for farmers in a changing, modernizing environment than in a static, traditional one. They (1980a: 129; 1980b: 55) argued that, as suggested by Schultz (1964, 1975), the environmental context may have an important impact on the effects education will have on production. Their 1980 article (1980a, b) set out to test this hypothesis. Schultz (1964, 1975) had argued that education is likely to be most effective under modernizing conditions.¹⁷ He had observed that

¹¹ In 1980, only Jamison was working in the World Bank, with Lockheed and Lau working in the Bank as consultants. Marlaine Lockheed was in the Educational Testing Service, Lawrence Lau was at Stanford University and Dean Jamison in the Development Economics Department of the World Bank. Their 1980 article was later integrated into Jamison and Lau (1982) – see below.

¹² The first version of the Lockheed et al study was published in the July 1980 edited volume by Timothy King, *Education and Income* (see King, 1980). This will therefore be referred to as Lockheed et al (1980a). However, a slightly earlier – but longer - version of the same paper was used to prepare the section in King (1980), but was not published until October 1980 in *Economic Development and Cultural Change*, and reprinted the same year as a World Bank paper. This will be referred to as Lockheed et al (1980b). Where citations are used in this paper, the page references for both the 1980a and 1980b versions are included. Where this paper refers to the Lockheed et al 1980 study/paper, we are referring to both.

¹³ Although Lockheed et al was published in 1980, the studies that they review were conducted between 1961 and 1975, the majority of them being published in the 1970s (see Lockheed et al, 1980a: 116-117).

¹⁴ The number of data sets used by Lockheed et al in their study was reduced from 37 to 31 due to comparison or technical reasons: Due to the differences in samples, outputs, and factor inputs among the studies included, Lockheed et al. 'restricted their summary histograms and regressions to include (1) only agricultural production function studies... (2) only studies in which the dependent variable was a field crop or an aggregate of several field crops... (3) only studies in which the percentage gain per year of education could be computed...' (1980b: 46). Another study removed was Hopcraft's 1974 study of maize production in Kenya ('because of a finding of a negative effect of labour on output' (ibid)), leaving only one other African study in the comparison, being Mook's study also in Kenya (see Lockheed et al, 1980a: 119; 1980b: 46 for further details).

¹⁵ In this paper, 'average' is used to refer to the arithmetic mean.

¹⁶ When authors quote an average gain of 7.4%, but omit to mention the standard deviation of 6.8%, they are somewhat misleading, since a standard deviation of 6.8 would mean that two thirds of the results fall in the range of 0.6% to as much as 14.2%. See further below.

¹⁷ The economist, Finis Welch, who is currently a Distinguished Emeritus Professor of Economics, in Texas A&M University, further noted that

It is increasingly clear that the value of schooling in farming depends on the opportunities that farmers have to modernize their production. There are many poor communities in the world, however, where such opportunities are lacking; these are communities in which farming tends to remain ‘traditional agriculture’... In such communities there are no significant gains in the output from schooling. (Schultz, 1975: 841)¹⁸

In order to ascertain if the available data-sets supported this view, Lockheed et al sought to divide the relevant studies into those that were undertaken in nonmodernizing and in modernizing environments. They noted that some studies¹⁹ were explicitly testing Schultz’s hypothesis, making it easy to classify a data-set as modern or nonmodern, but where it was not clear, a ‘subjective assessment’ (1980a: 129; 1980b: 56), or best-guess, was made (Lockheed personal communication, June 18th 2004).²⁰ A modern/nonmodern classification was made by the researchers for 23 of the 31 data-sets (Lockheed et al., 1980a: 129; 1980b: 56).²¹

The criteria for identifying an environment as nonmodern included primitive technology, traditional farming practices and crops, and little reported innovation and exposure to new methods. The criteria for identifying an environment as modern... included the availability of new crop varieties, innovative planting methods, erosion control, and the availability of capital inputs such as

Allocative ability plays a key role in determining education’s productivity in agriculture and is most relevant in a dynamic setting...

... in a technically dynamic agriculture, a factor [input of production] may be obsolete before its productivity can be fully explored! Herein, I think, lies the explanation of education’s productivity. If educated persons are more adept at critically evaluating new and reportedly improved input varieties, if they can distinguish more quickly between the systematic and random elements of productivity responses, then in a dynamic context education persons will be more productive. (Welch, 1970: 47)

Nelson and Phelps (1966) also argued that the returns to general skills are enhanced in a dynamic environment.

¹⁸ Schultz’s (1975) paper uses a distinction between ‘traditional’ and ‘modern’ agriculture, a spin-off of the dual economy literature of the 1950s that conceived of ‘traditional’ and ‘modern’ sectors (see Boeke, 1953; Lewis, 1954). Note that Schultz’s paper was published three years after the highly influential ILO Mission to Kenya (ILO, 1972), which internationalised the notion of the formal and informal economies as opposed to the modern – traditional sectors. The concept of the informal sector was actually introduced earlier by Hart at a conference at the University of Sussex in 1970, later published as Hart (1973) (cf. Palmer, 2004a; 2004b).

¹⁹ Unfortunately, Lockheed et al. did not specify which studies in their summary were explicitly testing Schultz’s hypothesis and which studies they had to make a ‘subjective’ assessment about.

²⁰ Lockheed et al (1980a,b) were criticized later on for their use of ad hoc classifications to define modernizing agriculture (cf. Moock and Addou, 1994: 245).

²¹ As mentioned above, the Lockheed et al (1980b) paper was essentially a synthesis of 18 studies from other researchers, with a combined total of 37 data sets. Of these 37 data sets, 6 were removed by Lockheed et al in their calculation of schooling and agricultural productivity (ibid: 54-55), leaving 31 data sets. When they were doing the modern-nonmodern comparison, the number of data sets was again reduced to 23 (ibid: 56-57) as the authors were only able to make modern-nonmodern distinctions for this number of data sets (in 8 cases it was not possible for Lockheed et al to distinguish if the original research was undertaken in a modern or traditional environment).

insecticides, fertilizers, and tractors or machines. Some other indicators of [a modern] environment were market-orientated production and exposure to extension services. (Lockheed et al., 1980a: 129; cf. 1980b: 55-56)

Lockheed et al concluded that without the conditions of a modernizing or modern environment, it was difficult for educational effects to occur (Lockheed, personal communication, June 18th 2004), and indeed ‘the mean percentage increase [in productivity] may even be negative’ (Lockheed et al., 1980a: 131; 1980b: 57). Their 1980 paper²² notes that

The effects of education were much more likely to be positive in modernizing agricultural environments than in traditional ones... (Lockheed et al., 1980a: 142; 1980b: 61)

Under modernizing conditions, the effects of education are substantially greater than under traditional conditions... The mean increase in output for 4 years of education under traditional conditions was 1.3% [standard deviation of 11%], compared with 9.5% [standard deviation of 5.7%] under modern or modernizing conditions. (Lockheed et al., 1980a: 131; 1980b: 56)

Hence, the five quotations that we started with at the beginning of this paper – all versions of ‘four years of education raise agricultural productivity’ – are really misrepresentations of Lockheed et al.’s study; as we have noted above, the original research by Lockheed, Jamison and Lau (1980) said education makes a difference to farm productivity of about 10% in a **modernising environment**. Education makes virtually no difference to farm productivity, the researchers argued, **if the environment is non-modern** [where agriculture is traditional and where there are no new methods and new crops being tried out] (Lockheed et al., 1980a; 1980b). If the above research is used for policy without a reference to the crucial importance of context or environment, there is a danger of misleading the reader. Let us now examine more of the caveats or ‘health warnings’ that were present in the original Lockheed et al findings.

The ‘Health Warnings’ of the Lockheed et al study

Lockheed et al noted that the studies on which their research findings were based differed

from one another along many dimensions (including, in particular, the quality of data and data analysis)... [so that their] conclusions from comparisons across them must be drawn with care. (Lockheed et al., 1980a: 113; 1980b: 39)

Specifically, the authors (Lockheed et al., 1980a: 118-119; 1980b: 43) pointed towards problems of comparison arising, for example, from: i) sample characteristics (different

²² As Lockheed et al 1980a and 1980b are essentially the same, they are referred to collectively as the ‘1980 paper’.

sampling designs, different numbers of farms surveyed in each study and the type of crop surveyed)²³; ii) methods of analysis; iii) specification and measurement of the dependent variable (for example, the dependent variable for farm production varied from value of crop production to quantity of output); iv) specification and measurement of the independent education variable (the studies showed differences in the education variable used)²⁴; v) specification and measurement of other input factors (different studies include in the production function (and in different ways) various other production variables, like land, labour, capital, use of irrigation, quantity of fertilizer etc).

Lockheed et al (1980a: 120; 1980b: 46) originally ‘calculated the percentage increase in output for 1 additional year of education’. However, they were interested in the percentage increase or decrease in production that resulted from four years of schooling, as this was the ‘often-stated minimum’ for the basic-education cycle (Lockheed et al., 1980a: 129; 1980b: 47) at the time.²⁵ As a result their estimate ‘of the effect of 4 years is... simply four times the effect of 1 year as computed’ (ibid.). Thus Lockheed et al assumed a linear effect for the education function: that every additional year of schooling had the same effect on productivity, year after year.

The Lockheed et al (1980a, b) research, from which they drew what was to prove a very influential conclusion, was effectively a correlational study that noted education to be positively associated with agricultural productivity.²⁶ However, as is well-known, correlation is not necessarily causation, and the observed correlation between education and farm productivity might have been caused by a third or further variable, making the education-income relationship, at the very least, debatable. In fact, the authors (1980a, b) have been criticized for their lack of attention to the question of causality: that the observed relationship between education and agricultural productivity might be due to other factors (cf. Moock and Addou, 1994: 245-246). Marlaine Lockheed (personal communication, 18th June 2004) recently noted that for their 1980 study there was, in fact, no adequate means to control for the selection effect that took place for those that did or did not get schooling in the different data-sets.

When comparing those farmers who did not attend school earlier with those who did attend school, with respect to estimating the effects on farm productivity, we need to underline several points. Who gets access to school and the effect of the fact that they can go has crucial implications for the findings. Firstly, children from better socio-economic

²³ They also noted that “education was frequently not of primary importance to those undertaking the original data-collection efforts” (Lockheed et al, 1980a: 118; 1980b: 43).

²⁴ These differences related to; i) whose education is measured; ii) what the education measure is; iii) how the measure is expressed. Moock and Addou (1994: 247) later concluded that ‘the statistical effect of education on production differs depending on whose education is considered – that of the farm head, the farm manager, or all family members’.

²⁵ Four years of education was in fact not the length of most countries’ basic cycles of education – but in the Bank at this time there was a view that 4 years of education might be the minimum necessary to secure the retention of literacy (see King, 1991).

²⁶ Moock and Addou (1994) refer to Lockheed et al’s conclusion as ‘optimistic’ (ibid: 246), and note that, although about 50% percent of Lockheed et al’s data sets show a positive correlation, this was significant at the 0.05 level in only about half the cases (ibid) (cf. Phillips and Marble, 1986).

backgrounds (with families on higher incomes) are more likely to go to school and perform well and, as a result, have education that results in more positive developmental outcomes. Secondly, to claim that farmers with less education are less productive on farms because of their lower educational attainments fails to consider the possibility that household support systems are likely to be weaker for these types of people. Again the lower farm productivity might be a combination of disabling household environments as well as low educational attainment.²⁷ Thirdly, a farmer who attends 4 years of schooling of very low quality will normally get less out of it than a farmer who benefited from the same amount of good quality education. Hence, 4 years of schooling do not translate automatically into greater farm productivity. Issues of school quality are also absolutely critical (cf. UNESCO, 2004; Weale, 1992: 1).²⁸ Therefore (part of) the increase in productivity observed in the Lockheed et al (1980a, b) study may be influenced by other, omitted variables. It may not be education alone, but a combination of effects, from the family's socio-economic environment, from the education received at school (including type and quality), that may result in these claimed outcomes.

Philips (1987) has also pointed out that the 'expected' results of Lockheed et al's research varied across regions. He notes that studies from Latin America and Asia were well represented in their original sample (13 and 22 studies respectively), while there were only two studies from Africa.²⁹ He commented further that

of the 13 Latin American studies, only three (23.1%) are positive and significant... For Asia... over 77.3% (17/22) show the expected result. As for the two studies for Africa, one finds a negative effect of education on productivity, and the other finds no significant effect. (1987: 637)

Philips concludes that 'while there is evidence supporting the beneficial effect of education on productivity in Asia, there is little evidence to support its importance in Latin America or Africa' (1987: 637-638). He further argues that, 'the empirical evidence used to support the effect of education is tenuous and certainly not global' (1987: 638). Lockheed and Jamison (1987: 644), in response to Philips, comment that the regional differences that Philips (1987) referred to, might indeed be explained by Schultz's hypothesis (that education has a greater impact in modernizing conditions). They suggest that the policy environment and dramatic technological changes in agriculture in Asia might have accounted for the differences in the findings.

It should also be noted that the widely cited research axiom that four years of education result in a 7.4% increase in agricultural productivity (from Lockheed et al., 1980a: 129;

²⁷ This is noted by Weale in a World Bank Working paper. He comments that 'one cannot identify all the factors which influence earning power. Individuals with a favorable family background may be more likely to receive education, and the effects of family background may be mistaken for the effects of education' (1992: 1).

²⁸ The most recent Education For All Global Monitoring Report (UNESCO, 2004) examines the critical importance of the quality of education on outcomes.

²⁹ However, both the studies from Africa were from Kenya, and only one was used to test Schultz's hypothesis about modernizing environments (Hopcraft's 1974 study in Kenya was excluded). There were also studies from Greece, Israel and Japan not included in the classification above.

1980b: 54) is misleading for a further reason: that 7.4% is the **mean** gain across a whole range of country and time-specific contexts. This crucial caveat is often left out where the Lockheed et al work is used to argue that education has a substantial and positive effect on farmer productivity **no matter when or where** farmers happen to be. Where the mean figure is quoted, the large disparity in the alleged gains to agricultural productivity are smoothed out. Also of note is that there is a standard deviation of 6.8% relating to the 7.4% mean (Lockheed et al., 1980a: 129; 1980b: 54), is also missed out of most presentations of the Lockheed et al findings. What is significant about this is that, in a normal distribution, approximately two-thirds of the data set fall within one standard deviation of the mean. Thus, for the Lockheed et al work, two-thirds of the data would be expected to fall within the range 0.6% (7.4%-6.8%) to 14.2% (7.4%+6.8%). In other words, for two-thirds of the studies, the effect of four years of education on agricultural productivity varied between 0.6% and 14.2%, a significant range that the simple, but attractive, claim that four years of schooling increase productivity by 7.4% fails to convey. The fact that the mean of 7.4% has quite a large standard deviation (of 6.8%) means that the range of estimates of the effects 4 years of schooling on farm productivity was also large. Hence, simply quoting the figure 7.4% disguises completely this broad range of actual research findings.

THE POLICY IMPACT OF THE FARMER EDUCATION RESEARCH

The Lockheed et al (1980a, b) research finding, that four years of education have a beneficial impact on agricultural productivity, found its way very rapidly into both education and development policy. This section traces historically the dissemination of these research findings; into the World Bank's educational policy literature and policy papers including those from 1980, 1988, 1990 and 1995 and 2001; into the *World Development Report* (WDR) of 1980; very recently into the UNESCO EFA Global Monitoring Reports of 2002 and 2003; and into the ILO report of 2002; and into bilateral development agencies, such as DFID/ODA and IDRC. But 1980 was a crucial year for the dissemination of this research into policy; it saw the findings transferred directly into education policy via the 1980 World Bank *Education Sector Policy Paper* but also into wider development policy through the 1980 WDR.

The World Bank 1980 *Education Sector Policy Paper*

The World Bank's (1980a) *Education Sector Policy Paper* (ESPP), published in April 1980, was led by Wadi Haddad, and it drew on the research of Lockheed et al (1980b) on education and agricultural productivity. The Lockheed et al study was important to the 1980 *Education Sector Policy Paper* as it helped to argue the importance of education as an investment within the World Bank. Indeed, this ESPP was apparently billed by Robert McNamara, the then World Bank President, as 'the best paper the board had recently seen' (Wadi Haddad, personal communication, 15th June 2004).

With respect to farmer productivity and education, the 1980 ESPP notes that

recent research in low-income countries has shown that general education³⁰ does improve the productivity of small farmers. A review of 20 studies³¹ of the education of farmers and the efficiency of farms indicates that farm productivity increased, on average, 7.4 percent as a result of farmers having completed four years of school... Thus basic education in the rural sector, as in the modern sector, brings measurable economic benefits. (World Bank, 1980a: 49-50)

Interestingly, despite all the cautions of the Lockheed et al (1980) study, which was, of course, the ‘recent research’ quoted above, the 1980 *Education Sector Policy Paper* makes no mention of modern/nonmodern qualification. Crucially, there is no mention of the fact that, in ‘nonmodern’ environments, where farmers have no access to fertilizers or extension for example, the effects of education on farmer productivity are markedly different.

However, the 1980 ESPP does place a more general limitation on the effects education can have, and emphasizes the kind of approach that arguably emerges later in donor direct-budget support – where education is funded as part of a wider system. The 1980 ESPP powerfully underlines the importance of the enabling environment and of what we could term critical supporting systems (see further below):

What education can do, however, is constrained by, among other things, the prevailing economic order, political power, and social structure. Education is certainly most effective in settings in which several interrelated policies and programs fostering social and economic improvement are simultaneously at work... One must think of education, therefore, not only as a “sector” of development – parallel, for example, to agriculture or industry – but as a pervasive element that must be integrated – horizontally and vertically – into all development efforts. (World Bank, 1980a: 14)

A further very important addition took place in the translation of this World Bank research into World Bank policy: while the original research had principally talked just about ‘years of education’, the policy paper chose to refer to this factor as ‘primary education’ or ‘basic education’. In other words, the research was seized upon for its potential use in the emerging arguments about benefits of different kinds of educational investment. Within just a few months, research that had not been seeking to make any

³⁰ The fact that the 1980 ESPP mentions that it is ‘general education’ – and not vocational or agricultural education – that improves farmer productivity is interesting. [0] This links the 1980 paper to the Foster debate on the merits of general versus vocational education. It is worth noting that it was Wadi Haddad who first initiated the research review in the Bank which supported Foster and suggested that the World Bank’s many diversified secondary education projects were highly problematic in terms of their original objectives. See further Haddad and Conly, 1987; King, 1991.

³¹ Clearly, the 1980 ESPP is referring to Lockheed et al’s findings (they are referenced in the bibliography, the finding of 7.4% is exactly the same, and the 1980 ESPP reproduces a table from the Lockheed et al research in Appendix 15 (see World Bank, 1980a: 124)), but Lockheed et al refer only to 18 studies; so it is not clear if the ‘20 studies’ referred to in the ESPP is a typing error, a rounding-up or is referring to two other studies.

special point about primary education³² versus other sub-sectors of education was being utilized strategically for exactly this purpose.

The 1980 World Development Report (WDR)³³

Following the *Education Sector Policy Paper* of 1980 (World Bank, 1980a), the World Bank immediately used the research from Lockheed et al, among others, in the 1980 WDR. The 1980 WDR³⁴ signaled a change in view – away from the manpower planning of the 1970s – towards emphasizing the value of general education at the primary level (Lockheed, personal communication, 18th June 2004; World Bank, 1980b: 46). Thus, research from Lockheed et al which emphasized the importance of four years of education to farmer productivity was useful evidence to justify this change of policy. The 1980 WDR, in effect, managed to change the culture in the World Bank (Wadi Haddad, personal communication, 15th June 2004) and signalled a shift in thinking, and funding, towards basic, primary education.³⁵

Lockheed et al (1980a) produced a review of their findings (later to be published in Lockheed et al 1980b) in a World Bank Staff Working Paper (King, 1980) that itself was a paper prepared as part of the background work for the 1980 *World Development Report* (World Bank, 1980b).³⁶ Part of the 1980 WDR (cf. pp. 48) draws directly on the work of Lockheed et al (1980a), and reproduces a summary of the studies reviewed by them (cf. World Bank, 1980b: 48, table 5.3).³⁷ The 1980 WDR notes that the evidence (from Lockheed et al, 1980a)³⁸ ‘lends strong and consistent support’ (World Bank, 1980b: 48) to the hypothesis that primary education has positive effects on agricultural productivity.

³² There is in fact a single reference in the text to elementary education in the original article. But the research was more interested in the contrast between the effects of formal and nonformal education on output than on contrasts within formal education – whether primary or secondary.

³³ There were two main parts to the 1980 WDR; Part I Adjustment and Growth in the 1980s; Part II Poverty and Human Development.

³⁴ Paul Isenman led the team that prepared the 1980 WDR.

³⁵ One of the background documents produced for the 1980 WDR was a World Bank Working Paper, *Education and Income*, edited by Timothy King (King, 1980). This included a version of the Lockheed et al work (1980a).

³⁶ Timothy King’s edited working paper, *Education and Income*, was published in July, 1 month before the publication of the 1980 WDR in August that same year. It is more than likely that draft versions of the King paper were available prior to that.

³⁷ There is, of course, no direct reference to Lockheed et al’s work, or indeed any other authors, as is the tradition with the WDRs. It is clear, however, that the section on education and agricultural productivity is based on the Lockheed et al’s findings. Note that an entry in table 5.3, pp.48 of the 1980 WDR seems to be incorrect: the estimated percentage increase in annual farm output due to four years of primary education for the 1969 Colombia study (Moniquira) should be -12.5%, not +12.5% as appears in the WDR (see Lockheed et al, 1980a: 123; 1980b: 49). Thus the average increase in productivity for the studies ‘without complementary inputs’ (fertilisers, HYV seeds etc) appears slightly exaggerated in the 1980 WDR.

³⁸ The 1980 WDR refers the reader specifically to their table 5.3 on p.48 of the 1980 WDR which reproduces some of the Lockheed et al (1980a) summary. This single table is actually referred to by the WDR as ‘the general weight of evidence’ (World Bank, 1980b: 48).

Intriguingly, however, the 1980 WDR appears to reproduce the Lockheed et al (1980a) findings in a very positive light and, crucially, without any reference to many caveats of the original study. Despite the bias towards South Asia in the original research, the 1980 WDR generalizes the findings of the Lockheed et al research to the whole of the developing world and fails to note that in many countries, or within many countries, these ‘complementary inputs’ (the ‘modernising environment’ of the Lockheed et al research) are not present. The conclusions of the Lockheed et al paper were that under modernizing conditions there was a 9.5% increase as a result of four years of education, and only a 1.3% increase under traditional conditions (Lockheed et al., 1980a: 131; 1980b: 56). However, the 1980 WDR significantly altered the interpretation of the original results, both in respect of the enabling environment and in their explicit reference to primary schooling rather than mere years of schooling; it was able to conclude that

[w]here the complementary inputs required for improved farming techniques were available, the annual output of a farmer who had completed four years of primary schooling was... 13.2 percent more than one who had not been to school... [W]here complementary inputs were not available, the increase in output resulting from additional schooling was... smaller – but still substantial. (World Bank, 1980b: 48)

In the Lockheed et al (1980a) paper the figures 9.5% (for modernizing) and 1.3% (for traditional) were weighted averages (weighted to compensate for differences in reliability of the studies) for 23 data sets (see *ibid*: 129-132). Whereas in the 1980 WDR un-weighted averages were used that provided higher estimates for the increase in productivity (13.2% for modernizing; 8.1% for traditional, see World Bank, 1980b: 48). Further, the 1980 WDR table excluded results from Thailand and Taiwan reported in Lockheed et al (1980a). Had these been included the average (un-weighted) increase in productivity from 4 years of education would have been 11.9%, instead of 13.2% for modernizing conditions. For nonmodern conditions the average (un-weighted) increase in productivity from 4 years of education would be 4.5% (with the correct 1969 Colombia study data of negative 12.5%), or only 1% (with the 1969 Colombia study correction and excluding Greece³⁹), compared to the 8.1% (un-weighted) average reported in the 1980 WDR. Hence it can be seen that depending on which figures (from the Lockheed et al paper) are included or not included, as well as whether weighted or un-weighted averages are used (and including or excluding the faulty 1969 Colombia data), the Lockheed et al findings can be presented in a rather more positive manner than perhaps the authors intended.

³⁹ Greece is hardly representative of developing countries and skews the average due to its high value of 25.9%

Colclough, C. (1980) *Primary Schooling and Economic Development*, a World Bank Staff Working Paper

In June 1980, Christopher Colclough⁴⁰ produced a Staff Working Paper for the World Bank, *Primary Schooling and Economic Development*, in which he drew upon the Lockheed et al research. He reproduced the key finding that ‘four years of schooling, on average, increased [farm] output by about 8 percent’ (Colclough, 1980: 12). Colclough did mention the importance of the ‘modernising’ environment and noted that ‘the most important determinant of whether or not education has a positive effect upon output is whether or not the farmer is living in a ‘modernizing’ environment’ (ibid). However, while Colclough did stress the importance of a modernising environment, he did not explicitly state that the increase in farm productivity would be quite substantially less in the nonmodern environment. Nor did he mention any of the other numerous caveats, or cautions noted above. Colclough did, however, mention that the use by Lockheed et al of an education variable of ‘years of schooling’ was problematic. Notably, that the correlation between education and productivity might be the result of an omitted variable.

The 1988 World Bank Education Paper on Education in Sub-Saharan Africa

The World Bank’s 1988 *Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization, and Expansion* continued to use the farmer education research to underline the point that ‘investment in education... increases the returns to investment in other sectors’ (World Bank, 1988: 23). The paper notes the importance of the ‘modernizing’ environment and comments that where this is absent ‘there is little pay-off to education:

A recent review of eighteen studies of farmer education and farm productivity in thirteen countries concluded that farmers who have completed four years of education produce, on average, about 8 percent more farm output than farmers who have not gone to school, controlling for differences in the use of physical inputs. Moreover, the percentage increase in output associated with four years of education is found to be about 10 percent in “modernizing” environments... in more traditional environments, where technology and opportunity are changing slowly, there is little payoff to education. (World Bank, 1988: 22-23)

...although education is associated with increases in agricultural productivity, the impact of education is found to be much greater in environments that are modernizing. (World Bank, 1988: 21)

It is interesting to note the influence of this research in a Bank policy paper on Africa, since, as we have shown, only two studies – both from Kenya – were included in the Lockheed et al 1980 study. The World Bank’s 1988 policy paper notes that:

⁴⁰ Christopher Colclough was a research fellow in the Institute of Development Studies in the UK at the time. Some 20 years later, he was to be the lead author of UNESCO’s first three EFA Global Monitoring Reports. See further below.

Only one African country, Kenya, was included among the thirteen countries in the review, but the results there were consistent with the general findings. (World Bank, 1988: 23)

However, it does not mention the problematic nature of the findings from Kenya. One of the Kenyan studies in the Lockheed et al work was conducted by Peter Moock in Vihiga Division in 1971 for his doctorate⁴¹, and, by coincidence, he was one of the main authors of the World Bank 1988 policy paper. Moock used two different dummy variables in his calculations. A dummy variable for four or more years of schooling showed a positive effect on output, while a dummy variable for one to three years of education showed a negative effect on the output of maize. Moock, in a re-analysis of his 1971 data in a later paper, noted that:

The effect of educational attainment on production is problematic; whereas men who have completed 4 or more years of school seem to produce nearly 2% more maize, all else the same, than men who have never attended school, those who have completed 1-3 years produce 11% less. (Moock, 1981: 731)

While Moock found that 4 or more years of education produced a positive effect on farmer production, he also found that 1-3 years of education produced a negative effect. This was not mentioned in the later World Bank policy paper.

The other Kenyan study mentioned in the Lockheed et al summary was conducted by Hopcraft between 1969-1970.⁴² He found that education had a negative effect on farmer productivity, with the estimated percentage increase in agricultural output for one additional year of education being *minus* 3.26%. 'Because of a finding of a negative effect of labour on output' (Lockheed et al., 1980a: 119; 1980b: 46), Hopcraft's Kenya findings were not included in the Lockheed et al calculations.

Appleton and Balihuta (1996) also point out that claims that 'four years of education increase agricultural productivity' that draw on Lockheed et al (1980) as evidence are misleading in the African context, since the Lockheed et al review only has two African studies. Given that Appleton and Balihuta have specifically spelled this out in their paper, it is surprising to find that their own research finding has been somewhat misrepresented in policy literature. Appleton and Balihuta (1996) analyse data from Uganda, and conclude that where 'farm workers have four years of primary school, crop output will be 7 per cent higher... than if they had no schooling' (Appleton and Balihuta, 1996: 426). This research finding – similar to the Lockheed et al figure of a 7.4% increase from four years of education – has found its way into policy documents, such as *The Oxfam*

⁴¹ See Moock, P. (1973) *Managerial Ability in Small Farm Production: An Analysis of Maize Yields in the Vihiga Division of Kenya*, Ph.D. Dissertation, Columbia University.

⁴² See Hopcraft, P. (1974) *Human Resources and Technical Skills in Agricultural Development: An Economic Evaluation of Educative Investments in Kenya's Small Farm Sector*, Ph.D. Dissertation, Stanford University.

Education Report (see Watkins, 2001: 44-45) and been used to suggest a general applicability of this research finding across Sub-Saharan Africa. Specifically, *The Oxfam Education Report*, using evidence from India, notes that the ‘benefits of education are especially strong in agriculture’ (Watkins, 2001: 44), and then goes on to ask: ‘Does the relationship between education and output apply in sub-Saharan Africa?’ (ibid.). To this question, *The Oxfam Education Report* comments that:

at a household level the benefits of education appear to be as robust as in other developing regions. In Uganda, four years of primary education were found to raise farm output by about 7 per cent, when other factors were accounted for. For households living on the margins of subsistence, these are significant gains. (Watkins, 2001: 44-45)

However, in their paper, Appleton and Balihuta (1996) go on to summarise the findings of 13 other, less well known, studies that have explored the relationship between education and agricultural productivity in six African countries; specifically in Kenya, Tanzania, Burkina Faso, Cote D’Ivoire, Ethiopia and Uganda. They conclude that

...the studies... make one cautious about the effect of education on agricultural productivity in Africa. In only a minority of studies is education estimated to have a significant positive effect on agricultural productivity... Nonetheless, the estimated effects are positive in most studies and often fairly large. (Appleton and Balihuta, 1996: 420)

Psacharopoulos’ (1988) *Education and Development*

In 1988, George Psacharopoulos was head of a section of the Education team in the World Bank concerned with research and evaluation. At this time, he published an article in the *World Bank Research Observer* in which he drew upon the farmer education work in a very simplistic, and misleading, manner.⁴³

According to a review by Jamison and Lau (1982), four years of education raises agricultural productivity by 9% over what it would be with no education. (Psacharopoulos, 1988: 105)

The World Bank 1989 *Africa from Crisis to Sustainable Growth*

This World Bank policy study, like so many of our other examples, generalized about the powerful effects of education on agriculture, but made no caveats about the interaction: ‘Similarly, raising educational levels enhances agricultural productivity and contributes

⁴³ Psacharopoulos was well known for his many rate-of-return to education (RORE) studies in the Bank; these were critical, for a time, in allowing the education team in the Bank to make the case that primary education had a better ‘return’ than secondary or higher. See Bennell (1996) for the case against RORE.

to the effectiveness of agricultural extension and, therefore, to food security' (World Bank, 1989: 64).

The World Bank 1990 Policy Paper: Primary Education

In September 1990, the World Bank Policy Paper on Primary Education was published, with Marlaime Lockheed herself as the main author. This policy paper came just a few months after the famous Jomtien conference had swung world opinion more towards support of primary education. What is intriguing about the first quotation from this policy paper (below) is that it states the positive relationship between education and productivity, without the essential health warning about the environment. In addition, the original research had just talked about elementary education. Now, by contrast, it is primary education that makes the difference.

Primary education has direct and positive effects on ...farm productivity...

One study showed that four years of education increased small-farm productivity by 7 percent across thirteen developing countries and by 10 percent in countries where new agricultural techniques were being introduced. (World Bank, 1990: 10)

The second quotation (above) draws directly on the Lockheed et al (1980a) findings that were based on thirteen low-income countries. However, the quotation above only presents the average increase in farmer productivity resulting from 4 years of education, '7 percent',⁴⁴ and the increase in modern environments, '10 percent'.⁴⁵ It does not include the less dramatic increase in farmer productivity that Lockheed et al estimated for traditional environments (1.3%).

World Conference on Education-For-All, Jomtien, 1990

The 1980 WDR, along with the research on education and various developmental outcomes, like the Lockheed piece, fed into the rationale for universal primary education (UPE) at Jomtien. However, there is no reference to the farmer education and farm productivity claim in the Jomtien declaration and Programme of Action.

However, the background document produced for the World Conference on Education For All, *Meeting Basic Learning Needs: A Vision for the 1990s*, mentioned the Lockheed et al findings:

⁴⁴ Lockheed et al. concluded that on average 4 years of education result in a mean gain in production of 7.4% (1980a: 129; 1980b: 54).

⁴⁵ Under modernizing conditions, the effects of education are substantially greater than under traditional conditions... The mean increase in output for 4 years of education [was]... 9.5% under modern or modernizing conditions (Lockheed et al., 1980a: 131; 1980b: 56).

One study by the World Bank – based on eighteen analyses carried out in thirteen developing nations – concluded that a minimum of four years of primary education increased farmer productivity by an average of 8.7⁴⁶ percent for all countries and 10 percent for those undergoing modernization or growth. (WCEFA, 1990: 7)

Middleton, J., Ziderman, A., and Adams, A. (1993) *Skills for Productivity. Vocational Education and Training in Developing Countries*

The 1993 study, *Skills for Productivity*, by the World Bank also draws on the Lockheed et al findings (from Jamison and Lau, 1982) – citing them specifically - without reference to any of the usual caveats that we have been discussing. It notes that:

A widely quoted study, which summarized more than thirty studies on the relationship between education and agricultural productivity, concluded that, on average, productivity increased by 8.7 percent if a farmer had finished four years of primary schooling (Jamison and Lau 1982). (Middleton, Ziderman and Adams, 1993: 41).

The World Bank 1995 *Priorities and Strategies for Education*

Nicholas Burnett, then of the Education and Social Policy Department, was the task team leader responsible for this 1995 World Bank Review of education.⁴⁷ The 1995 policy paper mentions Lockheed et al specifically – referencing them – but, again, not going into any details of their specific findings, or noting any difference in the effect of education in nonmodern and modern environments:

Studies have found that a farmer with four years of complete schooling has a much higher productivity than one with no education (Lockheed, Jamison and Lau 1980; Mook and Addou 1994). (World Bank, 1995: 27)

The World Bank 2001 *A Chance to Learn: Knowledge and Finance for Education in Sub-Saharan Africa*

A parallel Africa paper to the above general education policy paper was prepared by Adriaan Vespoor, an education lead specialist in the Africa Region of the World Bank.

⁴⁶ The 8.7% average here comes from Jamison and Lau, 1982. In their review of previous studies, they had included new studies from Korea, Thailand and Malaysia. The results then showed ‘that the mean gain in production for 4 years of education was about 8.7 percent with a standard deviation of 9.0 percent’ (Jamison and Lau, 1982: 36-37).

⁴⁷ Nicholas Burnett, a former World Bank staff member, is now the Director of the EFA Global Monitoring Report Team, a position previously held by Christopher Colclough.

This paper simply accepts the basic thrust of the education-farmer productivity research, references Lockheed et al directly, but does not go into any of the caveats or the distinction between the impact of education in different types of environment:

Numerous studies show that education, particularly primary education, has a significant positive impact on... productivity (Lockheed, Jamison and Lau, 1980). (World Bank, 2001: 7)

UNESCO

The EFA Global Monitoring Reports of 2002 and 2003 (UNESCO, 2002, 2003), as we noted above, both make reference to the effects of education on farmer productivity, but crucially, they do not mention any of the caveats contained in the original studies. Note also that there is no reference to the differential effects of education in different environments.

Many studies have shown that schooling improves productivity in rural and urban self-employment. Early evidence suggested that four years schooling was a critical period. More recent work has suggested that additional years continue to make a difference. (UNESCO, 2002: 34)

Education helps to increase agricultural productivity 'to a significant extent, [improving] ...household incomes and reducing poverty'. (UNESCO, 2003: 4)

However, UNESCO is by no means asserting that education alone can result in such positive outcomes. There is a very large literature making a similar case. In this review, however, we are more concerned with the particular skills acquired in the basic cycle of education and how these may translate into positive outcome, especially for the poor. It must be said that this large co-relational literature pays scant attention to the specific courses in basic education, whether these are traditionally academic or intended to be pre-vocational. Be that as it may, the EFA Global Monitoring Report on Quality (UNESCO, 2004) also highlights the importance of external contextual factors that impact on the quality of an education system.⁴⁸ Some of these factors include: the economic and labour market conditions; socio-cultural and religious factors; aid strategies; educational knowledge and support infrastructure; public resources available for education; parental support; labour demands (UNESCO, 2004: 36). There is, however, less explicit discussion on how external contextual factors impact on educational outcomes. Rather, this is implicit in the discussion related to context and school quality.

⁴⁸ There is, of course, also mention of learner characteristics and the teaching and learning enabling inputs (such as teaching materials, human resources and infrastructure) (see UNESCO, 2004: 35-37).

ILO

The ILO, like some of the other agencies we have mentioned, draws on this early World Bank research – but it too misinterprets it. Here is just one example of such misquotation which we referred to earlier:

According to the World Bank, primary education is the single largest contributor to growth in developing countries. A farmer with four years' schooling is much more productive than one who has no education. (ILO, 2002: 4)

Overseas Development Administration (ODA)/Department for International Development (DFID)⁴⁹

In ODA's 1995 *Education Policy Paper: Aid to Education in the '90s* it is asserted: 'Several studies reveal a positive relationship between education and rural productivity, for example through improving farmers' capacity to modernize' (ODA, 1995: 3).

Later, in DFID's 2001 *The Challenge of Universal Primary Education*, the following assertion is made: 'Good primary education can help to foster agricultural innovation and improve the capacity of people to make use of their environment in a sustainable way' (DFID, 2001: 11).

The 1982 International Development Research Centre (IDRC) report, *Financing Educational Development*⁵⁰

The IDRC report, *Financing Educational Development*, included a paper by Keith Lewin, Angela Little and Christopher Colclough, in which they discuss the Lockheed et al research findings. In this instance the Lockheed et al research is well represented by Lewin, Little and Colclough, who mention many of the original research caveats⁵¹ and, crucially, the difference in the effect of education on agricultural productivity in modern and nonmodern environments. Lewin et al conclude that what the Lockheed et al findings

... suggest is that there is an interaction between education and factors such as the availability of new crop varieties, fertilizer, exposure to extension services, etc. The relationship of education to productivity is strong and positive only when

⁴⁹ The Overseas Development Administration (ODA) changed to the Department for International Development (DFID) with the new Labour government of 1997.

⁵⁰ This was the proceedings of an international seminar held in Mont Sainte Marie, Canada, 19-21 May 1982 and organized by the IDRC and the Canadian International Development Agency (CIDA).

⁵¹ They fail to note, however, that there were only two studies from Africa in the Lockheed et al research – both from Kenya – and the implications this has for generalizing the Lockheed et al findings to Sub-Saharan Africa.

certain levels of these other factors are not present. When absent the relationship between education and productivity changes. (Lewin et al., 1982: 29)

OXFAM

In the Oxfam Education Report (Watkins, 2001) uses research evidence clearly from Lockheed et al's findings – though they represent the increase in productivity per year of additional education (instead of what Lockheed et al did and simply multiply their estimate for one year by four). The report notes that:

Cross-country research based on data covering 13 developing countries suggests that, after taking into account differences in land, labour, and capital, each year of additional education raises farm output by 2 per cent. (Watkins, 2001: 44)

The World Bank Research Enters the Academic Discourse

As noted, the original Lockheed et al article was re-published in *Economic Development and Cultural Change* in October 1980 (Lockheed et al., 1980b) and was later included in the monograph *Farmer Education and Farm Efficiency* (Jamison and Lau, 1982). This transferred their research findings into the academic arena.⁵² It is interesting to note, though not surprising at the same time, that – generally – where the Lockheed et al research is referred to in academic writing (or policy orientated research), the particular authors do tend to note most of the original caveats and health warnings from the Lockheed et al 1980 piece. Whereas, in policy documents, the Lockheed findings tend to a greater degree of generalization and the qualifications take a more minimalist form, if they are present at all.

In 1993, ODA published a piece of desk research by Keith Lewin, *Education and Development: The Issues and the Evidence*, which commented on the Lockheed et al piece well (Lewin, 1993: 21-22). Lewin accurately portrays the original findings of Lockheed et al, noting the effects of farmer education in different environments. Here, therefore, is a piece of policy-orientated research – as opposed to a policy document - that portrays the findings accurately.

In 1994, the *International Encyclopedia of Education* published an article by Mook and Addou (1994) who updated some of the Lockheed et al findings, reviewing 12 more studies published since 1980, from 14 countries [Africa (2), Asia (8), and the Americas (4)]. Their findings 'confirm, for the most part, the story that education has a positive effect on farmer efficiency' (Mook and Addou, 1994: 247). However, of the studies surveyed by Mook and Addou (1994: 252), 'only two explicitly compared different groups of farmers who were living in more and less modern settings (Cotlear, 1989) or who were engaged in more and less modern farming activities (Jamison and Mook,

⁵² In the 1982 book Jamison and Lau look at new data sets from Korea, Malaysia and Thailand – that confirm their earlier findings.

1984)'. Moock and Addou (1994) noted that Cotlear's Peru study (Cotlear, 1989) showed that the statistical effect of education had a stronger effect in a modernizing environment. In Jamison and Moock's Nepal study (Jamison and Moock, 1984), the authors noted a positive effect of education in the production of wheat – a newly introduced crop – but not in the traditional crop of paddy (cf. Moock and Addou, 1994: 252). In both the Jamison and Moock Nepal study and the Cotlear Peru study, therefore, there is further evidence to underline the importance of distinguishing between the sort of enabling environments that education is delivered in.

Conclusion

We have argued in the first section of this paper that the attraction for policy of this research was that it claimed a connection between education and increased farmer productivity. This was particularly attractive in the World Bank as they needed to make the case that investment in education was not a consumption good or a human right, but that it also translated into economic growth. However, the Lockheed et al (1980a, b) research, which explicitly stated that education is more effective in modernizing conditions, points to the fact that education, on its own, may not be sufficient to result in positive developmental outcomes. This is a very simple message, but it is exactly the opposite of what many agencies derived from this World Bank research. They chose to present the research in an 'edu-centric' way – to suggest that education itself has this kind of impact. Although, as we have shown, this core message of the research has often been misrepresented or oversimplified, as it was taken up and translated into policy by the World Bank, development agencies, and NGOs, and as it became accepted in the academic literature, it nevertheless made an important contribution to understanding the role of education in relation to its surrounding contexts. We have also noted that this influential research was not originally preoccupied with primary schooling. Rather it was looking at a quantitative measure - 'years of education' - both in formal education as well as in nonformal education. Because its methodology involved isolating the 'productive' effect of one year of education, and then scaling that up to 4 years, it became natural to conclude that the research was only concerned with primary schools. We have pointed to how this research finding was widely used by the policy community, from 1980 to 2005, to prioritise or make the case for investment in primary education. In the next section, we shall take the suggestive concept of the surrounding environment - from the Lockheed et al research – and develop it both in relation to the wider educational environment and then to the environment beyond the school and vocational training system.

We shall argue that the concept of the enabling environment is much more complex than the simple dichotomy between modernizing or stagnant, in economic terms, with which we have been engaged in this first part. Many other dimensions of the surrounding environment determine whether the investment in basic education will be productive.

PART II: EDUCATION AND ITS ENABLING ENVIRONMENTS

We shall argue that there are, in fact, two main types of surrounding environment that that could catalyse the linkage between basic education and a positive developmental outcome. One might be termed a ‘post-basic education and training environment’, while the other would be an environment that is outside the education system itself, such as the character of the macro-economic context, or in other words, ‘the wider non-educational environment’. Thus, secondary and tertiary education, and (formal and informal) skills development all form part of a post-basic education and training context or environment which may well be required to make primary or basic education fully effective. This means that post-basic education and training may themselves be a part of the essential enabling environment for basic education. Alongside this, and equally crucial, there is also the need for a ‘non-education related environment’ if education, in all its subsectors, is to deliver its full developmental impact.

The interplay between these two kinds of enabling environment is highly complex, especially since, as we shall argue in part III of this paper, the post-basic education and training system has itself a direct impact on these non-educational environments. We shall discuss educational and non-educational environments in turn. But we shall want to argue, along with Lockheed et al, that there are crucially important differences in the environments which surround basic schooling. In doing so, we are not synthesizing a series of quantitative studies, as Lockheed et al did. Rather we are examining and teasing out the shifts in education and development policy, which seem as much to be based on experience and on commonsense as on the review of state of the art research. For instance, we shall want to note that the terms which Lockheed and others used – stagnant and modernizing – could be applied to the school system itself. In other words, does investment in basic schooling provide all the well-known development benefits if the school system is of abysmal quality, and if teachers are uncommitted and frequently absent. To explore these and other issues we turn first to the synergy between basic education and the wider educational environment beyond the primary school.

A POST-BASIC SYSTEM OF EDUCATION AND TRAINING FOR SUPPORTING BASIC EDUCATION

This first environment with which we are concerned is internal to the education and training system. It would include secondary and tertiary education, and skills development – all of which may well be required to make primary or basic education fully effective. In other words, post-basic education and training may themselves be a part of the essential enabling environment for basic education to be effective. In contrast to the international agency priorities of the last 15 years which have focused on primary education, particularly because of the salience of the Jomtien and Dakar World Conferences and the Millennium Development Goals, Ministries of Education may need to plan for holistic systems of education which integrate secondary education, technical and vocational education, and tertiary education into a coherent entity. This may be

particularly difficult to do in very aid-dependent countries. But recent policy papers, such as the UN Millennium Report (2005) would suggest that the achievement of the Millennium Goals for primary education will not be possible unless very large numbers of poor parents perceive for their children pathways and opportunities for continuation beyond basic education on the basis of merit.

In looking at this relationship of different sub-sectors within the education system, we shall again draw heavily on World Bank sources, since the Bank, as we have just shown, is a potentially very influential source of both research and policy.

In the World Bank, as in other bilateral funders of education and skills development, there has long been a tension between targeting particular sub-sectors – such as vocational training or tertiary education – for particular policy reasons – and a holistic approach to the education and training sector. This is entirely understandable as an investment decision, but one of the unintended consequences of such priorities has sometimes been a failure to engage with the education and training system as a complex and interactive whole.

The importance of planning for education and training as an integrated sector has sometimes been lost as the agency pressure to emphasise a particular sub-sector such as non-formal education, diversified secondary schools, technical and vocational provision, or ‘high level manpower’ has held sway for a time.⁵³

Thus, the Bank’s early focus on infrastructure and on technical and vocational education (Jones, 1992; King, 2003)⁵⁴ inevitably had consequences for investment in other subsectors. These education loans in the first decade after the independence of many developing countries, were, not surprisingly, in the areas that were linked to the production of high level manpower. Equally, the orientation of agencies towards poverty reduction and basic needs of the early 1970s suddenly showed up that intermediate and tertiary education had been taking 80 to 90% of Bank investments in education, and that primary education had only received between 5 and 10% of the total. The redirection of Bank funding towards basic or primary education was powerfully signalled in the 1974 *Education Sector Working Paper*. A very significant aspect of this refocusing was the affirmation of the equity and human rights dimensions of basic education – expressed

⁵³ Philip Foster points out that the current climate of opinion at a given time influences which research evidence is used to support policy arguments. Hence at the very time when the World Bank was pursuing its ‘high level manpower’ emphasis in the 1960s, Anderson and Bowman (1965) argued that it was primary education that was the important factor in development - but this ran counter to the then current climate of opinion and so ‘sank without a trace’ (Foster to Palmer, personal communication 15th September, 2004). In fact, Wadi Haddad made a similar point - that in the early 1990s, Fuller and Holsinger (1993) produced a paper on secondary education for the Bank that reviewed the major issues associated with secondary education in developing countries. However, this did not have much impact in the Bank at the time, perhaps because Psacharopoulos’ preoccupation with primary education’s rate of return meant that the Fuller-Holsinger study did not receive due attention (Wadi Haddad to King and Palmer, personal communication, 15th June, 2004).

⁵⁴ The long-running priority of the Bank for what they termed ‘diversified’ secondary education, for example, had negative implications for their support of general secondary education (see King, 2003).

very forcefully by McNamara, the then Bank President (World Bank, 1974: 3).⁵⁵ But to this rights-based rationale, there was added from the very late 1970s and 1980s, as we have seen, research which has ‘produced a considerable amount of evidence to suggest that primary schooling makes a significant contribution to economic and social development’ (Colclough, 1980: 2).

Amongst this evidence, there was, of course, the classic finding about education and farm productivity which we have been analysing, but almost as important was the evidence on the relationship between primary education and reduced fertility (Cochrane, 1979); and thirdly there was the rate of return evidence which claimed that ‘both the social and private returns to primary schooling appear to be considerably greater than those at higher educational levels’ (Colclough, 1980: 8).⁵⁶

The long overdue realignment of investment priorities towards primary education would take some time to be translated from research into policy. But it is interesting to note that as early as 1980, the Bank was warning that the case for primary education should not imply a sudden change in policy towards other subsectors; there needed to be a balance within the education system:

Renewed emphasis on the importance of primary education, its high returns relative to secondary and higher education, should not start the pendulum swinging too far in the other direction. High levels of knowledge are necessary or many people who serve the poor, both directly as teachers, health workers and agricultural extension workers, and indirectly as researchers, technicians, managers and administrators....[t]here is for some purposes no better or cheaper substitute for the formal disciplines of conventional schooling.(World Bank, 1980b: 49)

Arguably, this warning – at a point when the Bank was for the first time strengthening the research base for its policies in education – was very timely, because there would be a tendency in later years for primary education to be prioritised, merely on its allegedly superior rate of return. This tendency to think in terms of trade-offs, and of ‘misallocation among education subsectors’ and ‘misallocation within education subsectors’ (World Bank, 1995: 56, 58) is at odds with our own position that there does need to be an awareness of the vital and necessary interaction amongst education subsectors. A sense of the crucial interdependency of education levels has sometimes been absent in Bank policies for education as well as with other donors. But it is precisely this dynamic intersectoral influence between primary and secondary, or secondary and higher that we are pointing to in our analysis of the post-basic education enabling environment.

It was a difficult balance to maintain because it flew in the face of the often grievous inequities both in national and international funding of primary education. As late as 1988, for instance, the Bank’s *Education in Sub-Saharan Africa* could point to the fact

⁵⁵ ‘A large part of the resources... is devoted to secondary and higher education, although the student enrolment at those levels is generally less than 20% of the total’ (McNamara in World Bank 1974).

⁵⁶ Colclough was drawing on Psacharopoulos (1973) for the rate of return evidence.

that only 7% of all direct aid to African education was used to finance primary education (World Bank, 1988: 103). This clearly argued for an adjustment in priorities – and this duly came with the Bank and several bilateral donors after Jomtien. But what was much less common was the promotion of basic education at the same time as noting the vital and inescapable synergies with other sectors of education and training.

We shall look accordingly at some examples, both in the Bank's and other agency documentation, of this recognition that the pursuit of a single subsector, in isolation from the larger system, is likely to be counterproductive.⁵⁷

In 2005, for instance, the World Bank finalised a new issues paper on secondary education, organized by Ernesto Cuadra (World Bank, 2005c); this has started to address the long-term neglect of secondary education in the World Bank.⁵⁸

Interestingly, the World Bank, after many years of being identified with the promotion of particular subsectors of education in isolation, is increasingly being seen as urging that secondary education and tertiary education are part of what we are calling a 'post-basic system' that is essential for primary education to have positive outcomes.⁵⁹ A 2002 World Bank policy paper recognises the importance of seeing education as a system:

Even countries far from achieving universal primary education and adult literacy must think about the balanced development of *all* levels of their education system... Progress in expanding enrollment in primary education quickly creates pressure for the expansion of secondary school and tertiary education, and it is important to put in place a policy framework for expanding these levels that ensures quality, relevance, equity, and financial sustainability. The secondary and

⁵⁷ Nothing in this critique of the recent agency preoccupation with primary education as a goal in its own right should be read without a sense of history. Nevertheless, by the time of the World Conference in Jomtien, and reinforced by subsequent world fora, conferences and publications, the phrase 'Education for All' had come to mean, for many agencies, just primary education. Thus, *Educating all the Children* (Colclough and Lewin, 1993) and *Education Now* (Oxfam, 1998) or *Education for All: Is the World on Track?* (UNESCO, 2002) referred to just one segment of education, primary schooling. A necessary campaigning strategy, maybe; but these titles did mark a sea-change from a few years earlier – when, for example, *Education in Sub-Saharan Africa* (World Bank, 1988) and *Aid to education in the 90s: education policy paper* (ODA, 1995) had covered the whole spectrum of education. The contrast in the late 90s and early 2000s is that for several agencies, the only easily accessible policy text on education is on primary education (e.g. Sida, 2001; DFID, 2001).

⁵⁸ This issues paper is the first general statement by the World Bank on secondary education since the abortive policy paper of the early 1990s. The new paper is essentially a literature review, complemented by studies from Chile, Brazil, Finland and Sweden. This issues paper links secondary education to developmental outcomes in three areas: secondary education and social capital (with research evidence mostly from developed countries on democracy and crime for example); secondary education and social dimensions (e.g. Health, HIV, child mortality); secondary education and productivity. Recently the World Bank has shifted the focus of research to include the secondary level. This can also be seen in the joint World Bank Institute/AED publication by Alvarez, Gillies and Bradsher (2003), *Beyond Basic Education*. The Bank has also organized two conferences on Secondary Education in Africa (SEIA) in Uganda in 2003 and most recently in Senegal in June 2004 (See <http://www.worldbank.org/afr/seia/> for details).

⁵⁹ Other donors, and notably JICA, have also regarded secondary, technical and tertiary education as vitally important to the health of the whole education sector.

tertiary levels are the levels that produce science and technology capability—which is crucial for economic growth and technology adaptation and innovation—and that also directly determine the quality and supply of professors, teachers, and education administrators. (World Bank, 2002b: 5, italics original)

A slightly earlier World Bank publication, of 2001, further notes the importance of taking a holistic view of the education system:

Primary education cannot expand and economies cannot grow without an education system that trains a large number of students beyond the basic cycle, including graduate students at universities. To be sustainable, education development must be balanced. It must ensure that systems produce students at different levels with qualifications that respond to the demand of the labour market, producing a continuous supply of skilled workers, technicians, professionals, managers, and leaders. (World Bank, 2001: 7)

The new World Bank issues paper on secondary education equally highlights a number of key points that show post-basic education to be essential for the health of basic education.⁶⁰ Specifically, it makes a number of powerful arguments about the interaction of secondary and primary education, and not least on the leverage secondary education has in maintaining the quantity and quality of primary, and thus assisting with achieving the Millennium Development Goals of education:

Investing in secondary education can have a direct impact on the effort of reaching Millennium Development Goal 2 [Achieving universal primary education]. (World Bank, 2005c: 21)

Increasing the provision and coverage of secondary education can boost completion rates in primary education. (World Bank, 2005c: 21)⁶¹

The United Nations Millennium Development Goals (MDGs) for education can only be achieved through systematic policies for postbasic or postcompulsory secondary education. (World Bank, 2005c: xix)

Contribution of Secondary and Tertiary Education to Primary Education

The precise nature of the relationship and interactions amongst primary, secondary and tertiary education is clearly complex, and while there is no universally agreed formula for their interplay, we can note that the Bank is seeking to clarify a possible modality through two metaphors: ‘Secondary education is a bridge between primary or basic education, the labour market and tertiary education’ (World Bank, 2005c: 15). ‘In developing countries,

⁶⁰ See Lewin (2003) for a number of reasons why a new policy for (formal) secondary education in SSA is needed. See also Palmer (2005b) for an argument for a more balanced education system in Ghana.

⁶¹ For evidence from Ghana, see Lavy (1996). Lavy found that improving access to secondary education not only improves enrolment at the secondary level, but acts as an incentive for primary completion. See also Lewin (2005).

despite all the efforts in recent decades, secondary education often acts as a bottleneck within the overall education system, inhibiting participation rates' at both primary and tertiary levels (World Bank, 2005c: 25). The Bank's issues paper on secondary education is thus pointing to two-way relationships between different sub-sectors of education. Primary education rates boost the demand for secondary, while secondary expansion creates a powerful incentive for primary completion. In developing countries, where teachers are often trained after completing the secondary level, secondary expansion will result in the provision of more teachers at primary level (World Bank, 2005c: 26-27).

A 2002 World Bank publication, *Constructing Knowledge Societies: New Challenges for Tertiary Education* (World Bank, 2002a), makes makes a similar point about the vital importance of tertiary education for reaching the education MDGs, as well as providing the necessary professionals for the entire education system. The paper argues that tertiary education is particularly crucial for the development and training of a wide range of health staff. Tertiary education therefore contributes indirectly to both the education and health MDGs:

It is doubtful that any developing country could make significant progress toward achieving the... MDGs for education... without a strong tertiary education system. Tertiary education supports the rest of the education system through the training of teachers and school principals, the involvement of specialists from tertiary education institutions in curriculum design and educational research... A similar argument applies to the contribution of postsecondary medical education, especially the training of medical doctors, epidemiologists, public health specialists, and hospital managers, to meeting the basic health MDGs. (World Bank, 2002a: xx-xxi).

Tertiary education: Support for Other Levels of the Education System

The Tertiary Education paper of the Bank reminds the reader of the classic research about the developmental impact of primary education but argues that this is inseparable from the positive impact of tertiary education on primary.

Tertiary education plays a key role in supporting basic and secondary education, thereby buttressing the economic externalities produced by these lower levels. Improved tertiary education is necessary for sustainable progress in basic education. The supply of qualified teachers and school leaders, capacity for curriculum design, research on teaching and learning, economic analysis and management-these and many more components of basic education reform are hampered by weak tertiary education systems. *A comprehensive approach to the development of the education sector is required*, along with a balanced distribution of budgetary resources to ensure that countries invest appropriately in tertiary education, with attention to their progress toward the Millennium Development Goals. (World Bank, 2002a: xxii, italics added)

Millennium Project support for the Interdependence of Education Subsectors

Support for a more nuanced approach to the investment in universal primary education comes from a surprising source in 2005, the UN Millennium Project itself. Although it might be anticipated that the Project would focus exclusively on how to reach universal primary education and gender equity – the two Millennium Development Goals (MDGs) – it took a much more holistic tack on how to achieve these.⁶² For example, the Project had been developing key policies in a series of Task Forces linked to the different MDGs. One of these Task Forces was charged with analysing progress on universalising primary education, and in its Report there are several powerful messages. The most striking of these very clearly underscores the conclusion that primary school completion – the objective of the MDG – may not be enough, on its own, to deliver the many benefits that are so frequently associated with basic education: ‘the task force believes that a focus on the completion of just five or six grades is too narrow, for several reasons’ (Birdsall et al., 2005: 64).

For instance, instead of the usual axiom about the many outcomes that flow from each year of primary schooling for girls, the Task Force Report boldly states: ‘the more educated a mother is, the better’ (Birdsall et al. 2005: 61). Furthermore, the Report reaffirms the importance of education beyond the minimum primary level: ‘Female secondary education is a critical component of lowering fertility and mortality’ (Birdsall et al., 2005: 162).

But it is the Task Force message that ‘the hoped-for economic and social benefits may be unobtainable with only five or six years of schooling’ (Birdsall et al., 2005: 64) that is most challenging to the whole MDG process on education. It flies directly in the face of the minimalism of the famous research we have been investigating above, about four years of education improving farmer productivity. Instead it argues that ‘[g]iven its current quality and orientation, schooling does not produce enduring benefits until a minimum threshold is reached, particularly for women’ (Birdsall et al., 2005: 161).

Further, the Millennium Project of the United Nations notes that a world campaign that is restricted to the achievement of primary education may, on its own, fall short of what is needed for a successful outcome. It therefore urges that policy-makers should ‘[i]nclude planning for expanding postprimary education with planning for achievement of universal primary education’ (Birdsall et al., 2005: 66).

This more integrated perspective on education is, therefore, by no means a perception restricted to the World Bank. At its best, the Sector-wide Approach (SWAP), which is now increasingly widely accepted by both bilateral and multilateral agencies, is emphasising, at least in name, a similarly comprehensive view on the entire education (or health) sector. Its very name signals this holistic approach.

⁶² For the wider politics of the MDG process, see King (2004).

Major international NGOs such as OXFAM are also very aware that, however high a priority the campaigning for universal primary may demand, it has to be tempered by an important acknowledgement: 'It is, of course, true that basic education alone is insufficient to equip countries and people with the flexible learning skills essential for success in the new economy.' (Watkins, 2001: 51).

Skills Development as part of a Post-basic Education and Training environment

There is a similar danger of narrowness in the planning of skills development, particularly in Africa. Because the growth sector of the economy has, in the last 10-15 years, been the informal sector, planning has begun to focus too much on skills for self-employment and micro-enterprise development, and not sufficiently on the many different skill levels needed for the growth of the wider economy (World Bank, 2004). We need to look carefully at the evidence that skills development provision, at several different levels, does translate into growth and poverty reduction (King and Palmer, 2006).

Of course, the suggestion that education at the primary level (or skills for self-employment) cannot be successfully planned for in isolation from further education and training opportunities may seem so obvious as not to need restating. But the sheer number of books, policy papers, and campaigning documents dedicated to the pursuit and achievement of primary education as a goal or an achievement on its own is such that some serious attention does need to be paid to seeing the education and training system as a whole, and particularly the dynamic character of the interactions amongst the different sub-sectors, including skills development.

Formal and Informal Skills Development

Of course, formal and informal skills development is just another element of the post-basic education and training environment. But its relationship to basic education is somewhat different from that which we have described for secondary and tertiary though there are also similarities. Essentially, it is that parental and pupil aspirations to acquire skills in order to get work or a job provide an important motivation for being in basic education. The expansions of the basic cycle thus make it crucially important for there to be evidence of opportunities after basic education for skills development.

This concern with the employment of graduates was the principal reason that the World Bank, almost from its first education project and for 20 years thereafter, supported diversified secondary education – with agricultural, electrical, automotive and home economics options – rather than general secondary. But unlike the Bank's support for primary education, with its research link to agricultural productivity, and other outcomes, the case for investing in diversified secondary schooling was not based on research at all. Bank staff in the 1960s and 1970s merely felt there was an obvious link to worker productivity from such curricula:

This (general secondary) education is dysfunctional for most types of employment – wage or non-wage – and for playing other roles needed in a developing society...The content of education must be re-oriented to relate skills taught to jobs, thereby ensuring that graduates can be employed. Emphasis on vocational and technical schools and centres, and attempts to ‘vocationalise’ the curricula of academic schools are illustrations of attempts to achieve such an orientation. (World Bank, 1974: 21-2; also Jones, 1992)⁶³

It was not until Wadi Haddad, as we noted above, began to carry out an analysis in 1979 of all the 80 projects that had ever been funded in the area of diversified secondary education that the older policy was shifted by research.⁶⁴ Coincidentally it was in the same *Education Sector Paper* of 1980 which, we have seen, carried the first influential claims about education and farmer productivity, that there was also a formal statement about the lack of research evidence for the effectiveness of the diversified secondary school:

There has been no consistent empirical indication of changes in the attitude of students towards labour; in the majority of projects, students still preferred academic fields to vocational training...Because the amount of specialised work included in the curriculum may be insufficient for the formation of skills, the diversified second school is a questionable method for training large numbers in specific vocational skills. (World Bank, 1980a: 45)⁶⁵

Intriguingly, in terms of the link between research and policy, it would not be until 1991, some 30 years after the Bank had started lending for technical and vocational education and training (TVET), that there would appear a research-based policy on the sub-sector of skills development as a whole (World Bank, 1991). This would reaffirm the criticism of school-based TVET, but would argue for strengthening primary and secondary education – ‘Training in specific skills is more effective when it builds on a strong foundation of general education’ (World Bank, 1991: 9). So, again we have a clear statement about the necessary interaction between skills development and basic education.

Ten years later, in 2004, the debate about the relationship between basic education and skills development has shifted again. Arguably, a combination of the research-based policy for primary education investment, and of the associated case for donors and governments meeting the Millennium Development Goals in Education was promising to produce some of the largest cohorts of basic education graduates ever witnessed in a substantial numbers of countries. Yet this was occurring at a time when formal sector employment was continuing to fall, and the great majority of all school leavers were

⁶³ On the history of the Bank’s involvement in skills development, see King (2003).

⁶⁴ Haddad, W. and Conly, S. 1987. *Diversified Secondary Curriculum Projects: A Review of World Bank Experience, 1963-1979*. EDT Discussion Paper No. 57, World Bank, Washington. It is intriguing that the publication of this research was so delayed.

⁶⁵ For a critique of vocationalised education and discussion of the latest education reforms in Ghana, see Palmer (2005c).

obliged to enter the informal, micro-enterprise economy, both urban and rural. In Sub-Saharan Africa, for instance, it is estimated that the informal economy is now responsible for 93% of all new jobs (Chen, 2001). In India 92.5% of the workforce operate in the informal economy (Jhavbala and Subrahmanya, 2000: 2).

All the evidence since independence about the series of big swings towards free universal primary education (UPE) indicates that parental commitment to primary school attendance for all their children will depend on some clear indication of improved opportunities for skills development and/or formal post-basic access on the one hand, and equally evidence of a relationship between basic education and ‘decent work’ through increased income generation in small and micro-enterprises (SMEs) on the other. Politically, therefore, the massive costs of UPE/EFA need to be able to answer the question: ‘Education for All (EFA) - for what?’ – in other words, how does primary school attendance link to post-primary outcomes? (cf. McGrath and King, 1999: 10).

This necessity to connect the MDGs (especially the Education MDGs with the Poverty Reduction Goal (Target 1) and with the Decent and Productive Work Goal (Target 16)) underlines the crucial and urgent need to point to the immediate post-school and income benefits of EFA. The sustainability of the current unparalleled investments in basic education will be determined by such evidence. The next few years’ experience of the quality and outcomes of EFA will determine whether the massive numbers of poor, first generation school-attenders and their families will continue their new commitment to schooling.

From the parents’ and pupils’ perspective, one of the key facilitating conditions (or enabling environments) for learning at one level is the opportunity either for continuation to another level or for access to productive work outside the school. The skills development sub-sector is therefore in a two-way relationship with basic education: like the secondary and tertiary sub-sectors its size and accessibility provide a key rationale for staying the course in primary education; but it is also seen to be very closely linked to the process of securing a job. Nowhere is the latter more obvious than in the informal economy since this provides both skills training and an opportunity for (self-) employment. As the informal, micro-enterprise economy represents the primary destination for basic-education graduates, it is crucial that a country develops the capacity of its informal economy. Both skills development provision within the education and training sector and the presence of a supporting and enabling environment for micro- and small-enterprise development outside the sector (to which we will return) may have the potential to build this capacity.⁶⁶

Unlike the argument about primary education and farmer productivity where the World Bank has felt there is research in place to support policy, with the informal sector and the link to training, they are obliged to talk about the possibility of increased income from training:

⁶⁶ See Palmer (2005a) for a discussion of skills development and enabling environments in Ghana.

Improved traditional apprenticeship is vital in view of the numbers involved and the potential to raise productivity and incomes in self-employment. To make traditional apprenticeship more effective, an integrated strategy needs to involve the following elements [there follow 10 pointers to change in informal sector training.]. (World Bank, 2004: 145)

Interestingly, however, in view of our concern with the link to primary education of the other sub-sectors of education and training, the Bank does feel that there is some suggestive research linking basic education and training within the informal sector:

Improve basic education: In West Africa, a general view prevails that basic literacy, including functional French, is of prime importance for better results in apprenticeship training. An important condition to improve the quality of apprenticeship outcomes is to raise the basic educational levels of apprentices early in their training. (World Bank, 2004: 139-40)

Formal skills development overlaps with some of the discussion here related to secondary and tertiary levels, since much formal skills training occurs in these settings. However formal skills are also taught in formal vocational and technical training institutes. A usual prerequisite for entry into this sort of training is a basic education qualification. The availability of formal skills training, of good quality and relevance, might encourage parents and children to complete basic education – as there is then a next stage to go to. However, formal technical and vocational education and training (TVET) usually receives a small amount of the education budget and, hence, TVET has been criticized for generally low quality and being of little relevance to the labour market. Thus a formal skills development reform – to improve quality, access and relevance – would be of great indirect benefit to the basic education system. However, reforming the formal skills training institutes to be more relevant to the labour market must mean making them more relevant to both formal and informal sector employment.

Concluding comments on the post-basic education and training environment for primary education.

In approaching the appropriate policies for the relationships between basic education and the wider environment of post-basic education, we have found that there is not the same kind of research that we were examining in the first part of this paper. There is, in fact, a distinct lack of the kind of research, for secondary and tertiary levels, that we had found for investing in primary education. Instead, there is commonsensical, experiential and historical analysis of the impact of post-basic levels of education upon the first cycle. These concern a whole series of critical dimensions of primary – and not least the retention of children, aspirations for continuation, the maintenance of quality, and much else – which are dependent on their being strong secondary, vocational and tertiary levels of education and training.

We have also noted that there have been a whole series of pendulum swings in donor policies which have frequently focused attention on just one sub-sector and have thus made it more difficult to achieve an integrated and balanced relationship between the different sub-sectors. Yet there has also been a strand of donor policy that has seen the wisdom of a more holistic and sector-wide approach.

In concluding this analysis of the essential synergy of the wider educational environment for the health of the primary education sub-sector, we should perhaps return to the language of ‘stagnant’ and ‘modernising’ environments used in the Lockheed et al study. Just as they sought to argue that the impact of primary education was influenced by the dynamism of the agricultural environment, so it could be argued that the dynamism of the wider post-basic education and training environment itself must inevitably influence the effect of the primary school experience. Thus, if the accessible secondary schools for poor children are of very low quality, e.g. the municipal schools of some of India’s cities, then may they not have the same impact on primary school aspirations – and even achievements – as a stagnant agricultural environment may have on farm productivity?

Such an approach would suggest that the quality, and the standards of the post-basic education and training system will have a powerful wash-back effect on primary. If youth polytechnics, as in Kenya today, are very poorly provided for, and therefore perform poorly, they will, like the public municipal secondary schools of India just mentioned, fail to act as targets for student and parental aspirations right back to the primary schools. Equally, from the point of view of the children of the poor, if the only secondary schools of good quality, whether private or public, are associated with high fees, it will have a direct impact on the attitudes towards the continued schooling of children in the primary level. Therefore, while the declaration of genuinely free primary education may still be able to draw many children initially into the primary sector, there is circumstantial evidence that the reason that many such first generation children drop out and are not retained is because there is no pro-poor pathway to an accessible good quality environment at the post-primary level.

The current World Bank *Education Sector Strategy Update* (2005) is concerned with just such a point of view. It sees the health and quality of the education system as being associated with a holistic approach, and not as something that can be assured by focusing on one level:

Rather than concentrate on a particular level of education, it emphasises a holistic approach that not only addresses needs at all levels, but, indeed, recognises that the challenges of access, equity, education quality, efficiency, financial sustainability, and governance and management are intra-sectoral issues that will never be adequately understood and addressed if they are considered from the perspective of education levels. (World Bank, 2005a: 20).

We end this analysis of the wider education environment surrounding primary or basic education with a conundrum about the relationship between basic education and its surrounding education environment. It is not just a question of their needing to be an

integrated comprehensive education system, as the Commission for Africa has also argued,⁶⁷ but of the educational environment in all its sub-sectors being dynamic. This is where our analogy breaks down, of course. It is not only a case of primary education being affected by the quality of the post-primary educational environment, but, clearly, the quality and dynamism of the primary school environment will itself affect relations with post-basic education and training. It is too often the case, unfortunately, that the economically poorest children find themselves in the poorest primary schools, with the least committed teachers. This ‘stagnant’ environment is no preparation either for their continuation to post-primary; nor is it a launch pad for the well-known development outcomes (or externalities) which we examined in the first part of this paper.

We should remember, in conclusion, that the renowned piece of research which we analysed was only concerned with years of education; there was no attempt to probe the quality of those four years, nor of the school environment. It is perhaps a nice way of ending this section and anticipating the next section – on the non-educational environment – to draw on the latest World Bank *Update*. It is critical of studies that look merely at the quantity of schooling and not at the quality and the results embedded in those years of education. It is therefore a last caveat on the finding that four years of education make a difference to agricultural productivity:

Most studies of the positive externalities associated with schooling are limited to analysis of years of schooling completed. Such studies can provide only a broad approximation of the increased earning potential, better livelihoods, and poverty reduction that are the result of the education enterprise. As such they provide insufficient guidance to countries and to donors alike as to the optimal use of resources. (World Bank 2005a: 33)

PART III. ENABLING ENVIRONMENTS BEYOND THE EDUCATION SYSTEM: EDUCATION AS PART OF A WIDER MULTI-SECTORAL APPROACH

We shall now turn to the relationship between the whole education and training system and the wider non-educational environment that is outside the education system itself. We shall not need to elaborate as much on this, since it was precisely an aspect of this external context with which we were concerned in the initial part of this paper. We had showed then how the careful research of Lockheed et al was transferred into generalisations and claims about education that frequently lacked the necessary qualifications about the key role of the enabling environment.⁶⁸ Our own perspective on

⁶⁷ ‘All elements [upper secondary, vocational, higher, skills, basic education] are part of a complementary and mutually reinforcing system’ (Commission for Africa, 2005: 182).

⁶⁸ As noted earlier, in their case, this enabling environment referred to ‘new crop varieties, innovative planting methods, erosion control, and the availability of capital inputs such as insecticides, fertilizers, and tractors or machines. Some other indicators of [a modern] environment were market-orientated production and exposure to extension services’ (Lockheed et al, 1980a: 129; cf. 1980b: 55-56).

the enabling environment is more complex than estimating the impact of four years of education in stagnant or modernising contexts, and it is less ‘edu-centric’ than the early research of the World Bank; it is not simply a case of assessing how so many years of education translate into different development outcomes. Our model, as will become clearer below, is much more interactive, and sees a series of two-way influences between the education and training system on the one hand and a set of critical influences or environments beyond the school.

Fortunately, three current, potentially very helpful, documents have started to discuss the crucial importance of seeing the expected outcomes and quality of education within such wider enabling contexts.⁶⁹ These are the UN Millennium Project Report (United Nations, 2005a) with its associated Task Force Reports, the Commission for Africa (Commission for Africa, 2005), and the World Bank’s forthcoming policy paper on Education, the *Education Sector Strategy Update (ESSU)* (World Bank, 2005a⁷⁰). There are of course many other sources that also underline the importance of the external context for its impact on what happens in schools, for example the EFA *Global Monitoring Report (GMR) on Quality* (UNESCO, 2004).⁷¹

The UN Millennium Project Report makes a very explicit connection between the external environment and potential educational benefits. What is refreshing about the Millennium Report is that, although it is subtitled *A practical plan to achieve the Millennium Development Goals*, its message is clearly that the Goals cannot be reached by aiming only at them. Just as EFA, it argues, cannot be reached by focusing only on basic education, but needs a more holistic approach to the whole education sector, including vocational training and higher education, so the Goals as a whole need to be embedded in a much larger development project if they are to be secured. In other words, the Goals need to be seen as part of an investment strategy that involves trade, inward investment, private sector development, rural and urban regeneration, and a great deal else, including action on governance. External aid will allegedly prove crucial to catalyzing this enabling environment.⁷² The Report correctly conceives that the impact of schooling is inseparable from other MDG-related initiatives in health, gender equity, water, environment and decent work, as well as the wider investments just mentioned.

This general message of the main Millennium Report is strongly confirmed and elaborated by its Task Force Report on Education and Gender Equality, *Toward Universal Primary Education: investments, incentives and institutions* (Birdsall et al., 2005). The Task Force puts the position very sharply – ‘the education system cannot do it

⁶⁹ For an earlier discussion of these three sources, see King, 2005b.

⁷⁰ We shall refer to the July 2005 draft of the World Bank paper.

⁷¹ The GMR on Quality highlights the importance of external contextual factors that impact on the quality of an education system. Some of these factors include: the economic and labour market conditions; socio-cultural and religious factors; aid strategies; educational knowledge and support infrastructure; public resources available for education; parental support; labour demands (UNESCO, 2004: 36). There is, however, less explicit discussion on how external contextual factors impact on educational outcomes. Rather, this is implicit in the discussion related to context and school quality.

⁷² For a detailed and critical account of the Millennium Project Report, see King and Palmer, 2005; and Ellerman, 2005.

alone' (ibid: 23) and argues that 'countries cannot depend on the education system alone to be the engine of economic, political and social change' (ibid: 30). The Task Force calls for structures and sectors outside of education to be supportive of the education system since 'the benefits of education are conditioned by the [political, social and economic] context' (ibid: 27). There was also a suggestion from the Millennium Project Task Force on Education that for the many claimed benefits of girls' education to be effective, a positive and egalitarian environment in respect of women's work and status is necessary:

The benefits for women are strongly conditioned by a number of factors, including the level of economic development, the depth of the labour market and, in particular, the degree of gender stratification. The impact of women's education is greater in settings that are already relatively egalitarian. (Birdsall et al., 2005: 29)

Indeed it is worth noting that the Task Force considers this enabling environment to be so vital to the impact of education that it dedicates a whole sub-section of the report to precisely this matter: '**The benefits of education are conditioned by the context**' (ibid: 27). It sees the economy as impacting very directly on both the supply and demand for education. On the supply side, there are fewer resources to invest in education in stagnant economies. And on the demand side, when economies are growing very slowly, the returns to education are less, and this has a knock-on effect on incentives to send children to school. But the Task Force also sees the social and political environments as hugely influential on education. Not that this means a kind of determinism. 'But what it does mean is that the achievement of universal primary education must be supported by both positive actions within the sector on the one hand and a progressive political environment and sound economic and social policies on the other' (ibid: 30). Interestingly, the Report identifies sound policies as being the responsibility of both the developing and the richer countries, since international trading regimes, for instance, are also part of the external environment that can have an influence on primary schools and their financing. Here, therefore, we already have several critical environments outside the school: the macro-economic, the political, and the international, as well as a recognition of what we have just discussed – positive actions within the education sector.

The Commission for Africa was published in March 2005, and like the UN Millennium Project Report, it is really proposing a massive integrated development project.⁷³ The Commission dedicates an entire chapter to 'Going for Growth and Poverty Reduction', and the contents of that chapter make it crystal clear that the priority conditions for growth are massive investments in physical, transport, and communication infrastructure, in a positive investment climate for entrepreneurship development, along with political commitment and good governance. Substantially more external aid is also a requirement. But the bottom line is that, without these, the very large proposed investments in health and education will not be sustainable.

⁷³ See also King, 2005a.

One of the Commission's gravest concerns is with the weakness of institutional and organizational capacity in Africa to deliver development. This is another way of underlining the crucial importance of the political and social environment in which the education investments are embedded. Indeed the Commission argues that unless these wider capacities are in place, it will severely limit the impact of other investments such as education. There can be few clearer statements about the role of the policy and political environment:

Strengthening states, so they are effective and able to deliver is, therefore, the foundation of our report. Unless Africa makes a concerted effort to do so, we believe that all other reforms, in international trade, debt and aid – essential though these reforms are – will have only limited effect. (Commission for Africa, 2005: 134)

Tackling the huge need for capacity strengthening will have major knock-on effects for all the other areas of our report, whether by increasing security and the rule of law, reducing corruption, improving service delivery and the operating environment for business or reducing the constraints which have limited governments' ability to absorb higher levels of development assistance. Action to strengthen capacity should therefore be a high priority. (Commission for Africa, 2005: 136)

Our third 'development text' is apparently much more narrowly focused on a single sector, education. But the draft of the next World Bank *Education Sector Strategy Update [ESSU]* (World Bank, 2005a) again emphasizes the vital importance of inter-sectoral linkages. It argues for linking education with overall developmental efforts, through summarizing a whole series of two-way relationships between education and health, social protection, water and sanitation, transport, energy, public-sector management, private sector development, social development and agriculture, rural development and the environment (World Bank, 2005a: chapter 2). The *ESSU* notes that these inter-linkages with other sectors can actually help strengthen educational outcomes and that integrating education with other sectors is crucial for the education MDG and other MDGs to be attained.

In fact, the *ESSU* draft suggests, like the Commission for Africa, that it is absolutely necessary for the education community to be aware that there are governance issues that can dramatically undermine education outcomes. In other words, the education sector cannot be conceived of as existing in a silo by itself; it is intimately affected by the wider political environment, and, given the costs associated with corruption, it is the children of the poor who are most affected by failures to intervene:

A governance issue that poses a fundamental threat to education outcomes is **corruption**. It is essential that sector assessments identify the problem - whether it occurs outside the education sector (buying and selling of civil-service jobs) or inside (buying and selling of grades or admission to preferred schools) - and

remedial options. Education interventions can contribute to higher standards of integrity. (World Bank, 2005a: 11, emphasis in original)

The Bank did not, however, discover only in 2005 the importance of the enabling inter-sectoral environment for education to be effective. In fact, a key element of the original research by Lockheed et al in 1980 was, of course, their evidence about the crucially important role played by the modernising or the traditional (non-dynamic) agricultural environment in determining whether four years of education did make any difference to farm incomes. As we have already noted, a number of economists (for example, Nelson and Phelps, 1966; Schultz, 1975; Welch, 1970, 1978) have suggested that a technically dynamic environment enhances the returns to education and general skills as more educated individuals are better able to make decisions and evaluate information in situations of economic disequilibria (changing economic conditions). In fact, there is much empirical research evidence showing that in technically dynamic environments, the returns to education are increased (Benhabib and Spiegel, 1994; Foster and Rosenzweig, 1996; Rosenzweig, 1995).⁷⁴ But what we are pointing out is wider than just the importance of a technically dynamic environment. We are indicating the importance of changes in the other key sectors of the wider economy that serve to catalyse the seemingly axiomatic education-development outcomes.

In the Bank itself, two of the most essential, and commonly mentioned, external conditions, which are not themselves part of the education system, are a strong national macroeconomic environment and a strong political commitment at the country level. The need to have a strong macroeconomic environment in place that promotes a rapidly growing economy - and growth that creates employment - is crucial. Stagnant growth, or growth without job creation, would be disabling to educational outcomes. Strong political commitment and good governance are also crucial. But there are many other critical, enabling systems mentioned in Bank documents. They would include: a strategic policy framework; a need to balance quality and quantity; a focus on equity; adequate financing; data to guide policy; partnerships with the communities and with donors; cultural and contextual factors; enforceable contracts in relation to property rights; access to capital and to microfinance; infrastructure and ports; and access to technology.

With most of these environmental factors, there has not been an attempt, as there was with farmer productivity in 'modern' and 'nonmodern' environments, to demonstrate the differential impact of different kinds of enabling or disabling systems – indeed it would be very difficult to do so.

Despite the evidence from the previous section that the World Bank has often identified a single subsector out of all proportion, nevertheless, seeing investment in education as one part of a wider multi-dimensional approach to development has also been a consistent thread in Bank documentation about the role of education. Thus, the 1980 *Education Sector Policy Paper* of the World Bank places a limitation on the effects that education alone can have, and emphasizes this multi-dimensional approach:

⁷⁴ The Lockheed et al (1980) findings obviously also support this thesis.

What education can do, however, is constrained by, among other things, the prevailing economic order, political power, and social structure. Education is certainly most effective in settings in which several interrelated policies and programmes fostering social and economic improvement are simultaneously at work... One must think of education, therefore, not only as a 'sector' of development – parallel, for example, to agriculture or industry – but as a pervasive element that must be integrated – horizontally and vertically – into all development efforts. (World Bank, 1980a: 14)

Later World Bank policy papers in education and training, in 1988, 1995, 1999, 2004a and 2004b, all tell a similar story:

Education cannot, in itself, bring about economic growth... Education accelerates the growth process; [but]... is an essential complement to other factors. (World Bank, 1988: 21)

Education contributes to economic growth, but by itself it will not generate growth. The strongest growth comes about when investment in both human and physical capital takes place in economies with competitive markets for goods and factors of production. Such markets are the product of macroeconomic stability, well-functioning labour markets, and an openness to international trade and flows of technology. (World Bank, 1995: 19-20)

A good education system is a necessary but insufficient condition for development, and its benefits are strongest when crucial other areas of public policy are equally well managed. In particular, macroeconomic policies, political processes, regulatory practices, the enabling environment for business development, public participatory processes, and labor market processes need to be sound. To be effective, education planning and implementation in turn need to take into account the social, cultural, religious, economic and political context in which they take place. (World Bank, 1999: 5)

Attention has been focused in this review on issues in skills development, but it should not be forgotten that the demand for labour and skills is derived from sound macroeconomic policies that promote investment and job creation. Training alone does not create jobs. The stagnation of wage employment in Sub-Saharan Africa...along with the region's dependence on the informal economy for job creation, emphasises the priority for getting the macroeconomic conditions right. (World Bank, 2004: 177-8)

Apart from these education policy papers where the larger, enabling environments are clearly underlined, the World Bank has also produced a guide for developing the education policy component of a Poverty Reduction Strategy Paper (World Bank, 2002b). In it, the Bank notes that the impacts of education

are strongest where education is integrated into a broader competitiveness strategy that includes macroeconomic stability, trade openness, incentives for foreign investment, competitive telecommunications pricing, and adequate infrastructure investments. (World Bank, 2002b: 4)

Another World Bank publication, *Achieving the Millennium Development Goals: The Role of Infrastructure* (Leipziger et al., 2003), notes the crucial importance of infrastructure:

that achieving the health and education MDGs will require more than health and education interventions. In particular, infrastructure services have an important role to play, and a failure to recognize this in planning MDG strategies will risk undermining success. (Leipziger et al., 2003: 13)

Also, in current ILO research, *Learning and training for work in the knowledge society* (ILO, 2002), there are some very suggestive ideas that resonate with some of the World Bank views on the enabling environment. Thus, there are sections on 'Investment in human resources development and training: the necessary economic, social and institutional environment'. The ILO is clear that supply-side measures such as the provision of education and training are fundamental but on their own are insufficient to meet the new challenges of a move towards a knowledge- and skills-based society. They need rather to be an integral part of active economic, labour market and social policies (ILO, 2002: 16).

Morrisson⁷⁵ has made a similar point, for the OECD, by arguing that poverty reduction efforts must look at the combined effects of, and synergies between, education and health.

we can no longer consider the effects of education or health in isolation; rather, the two must be taken together to estimate the overall impact on poverty. (Morrisson, 2002: 10)

The Global Monitoring Report (GMR) of 2006: *Literacy for Life* (UNESCO, 2005) provides very powerful confirmation of the need for there to be a very supportive environment if the many benefits of literacy are to be secured. The provision of literacy without a literate environment of newspapers, print media, libraries and postal services can be very challenging. More broadly, it is not only a literacy environment that is crucial; there are wider economic, social and legal contexts that are absolutely vital to sustaining new literates:

.....the benefits of literacy ensue only when broader rights and development frameworks are in place and operating effectively. Individual benefits, for example, accrue only when written material is available to the newly literate

⁷⁵ The OECD has done some recent work on health-education synergies in five francophone African countries (Burkina Faso, Cameroon, Côte d'Ivoire, Madagascar and Senegal). See the published report, *Health, Education and Poverty Reduction* (Morrisson, 2002).

person, and overall economic benefits only when there is also sound macroeconomic management, investment in infrastructure and other appropriate development policy measures. Similarly, certain benefits, such as women's empowerment, will result only if the social cultural environment is accommodating of them. (UNESCO, 2005: 137-138)

There is one other literature that has become relevant to understanding in what circumstances education and training investments can become more productive, and those are the literatures on institutional development and on capacity development (UNDP, 2002a, 2002b, 2003; World Bank, 2005b; Sida, 2000). These approaches – and they are many and varied – see the wider legal, social and political conditions in different societies as being crucial to the effective operating of education and training systems. The theoretical foundation for this version of the enabling environment conceptualizes capacity building or development as having three levels, individual, organizational and institutional. Like the Commission for Africa, this approach focuses particularly on the public sector, and on its implementation capacity. It reaches a conclusion that a focus merely on the training of individuals and on the attempted creation or reorganisation of units in government is not likely to change public service management. Rather it is the wider institutional culture that so often determines whether individual investments in education can be used productively, as in this example from the Bank's evaluation of capacity building in Africa:

The institutional context in which organisations and individuals operate is critical to ensuring the necessary incentives and rewards for improved public sector performance. And because human capacity, organisational processes, and institutional frameworks are closely related and do not change quickly, capacity building efforts must necessarily be long-term and systemic. (World Bank, 2005b: 27-28)

But this is not all; weak capacity in government may also be a reflection of a particular style of political leadership. This analysis goes to the heart of the challenge of the enabling (or disabling) environment. The following quotation takes us a world away from the 'edu-centric' naivety of axioms like 'primary schooling makes a difference to female fertility':

Public sectors are often weak, not just because of their lack of capacity, but also because their weakness benefits powerful interests that seek to avoid taxation, regulation or other reforms. External assistance can help on both the supply and demand sides of the process by providing inputs to enhance the functioning of the public sector and by strengthening structures of demand and accountability. But it cannot directly influence the cultural norms and political economy underpinning the demand for public sector performance. Therefore, capacity building efforts will succeed only where they take adequate account of the prevailing local politics and institutions and are country owned rather than donor driven. (World Bank, 2005b: 28)

This analysis of the challenge to capacity development makes it abundantly clear that agency-supported reforms of system-wide incapacities in government do need to start by addressing the political and institutional environment for capacity building. There are clearly implications also for large scale investments in individual access to health and education that do not take serious account of this wider context of utilisation.

A disabling environment for education and training?

As we have reviewed the several different literatures on the wider context in which school and skill are inevitably embedded, it would sometimes appear that we were analyzing a set of relations between schooling (or training) and developmental impact at a time when the institutional environment was extremely disabling. Consider the following remarks by Henock Kifle which are made of Africa, but may have resonance elsewhere:

The adverse effects on national capacity for development that the prolonged economic and political difficulties that most African countries faced in these last two decades could be summarised as follows: a weakening of public administration systems in general and civil service systems in particular; a decline in the quality of systems of education at all levels; and, in particular, at the tertiary levels; declining investments in the social sector, particularly in the education and health sectors – in some countries this has resulted in a reversal of the some of the gains that had been achieved in earlier periods; the out-migration of significant segments of the education elite...; and a weakening of the institutions of civil society as a result of the prolonged economic and political crisis (Kifle: 1998: 81).

Kifle has argued that the key task in this crisis is to develop Africa's 'capacity to create capacity' if there is to be sustained development and if the graduates of its education and training systems are to be used effectively. From his perspective, the so-called modernising environment looks extremely fragile.

But his critique is not very different from that of the Millennium Task Force on universal primary education, which we referred to briefly above. The capacity development and governance challenge of education is made very clear:

Many countries with poorly performing education systems suffer from institutional weaknesses, including low management capacity, non-transparent resource allocation and accounting practices, and substandard human resource policies and practices. Incentive structures that fail to reward good performance create and reinforce the most deleterious characteristics of weak institutions. (UN, 2005b: 6)

This is another way of saying that the benefits of education do not have an effect independent of context, culture and an enabling economic environment.⁷⁶ They are in fact conditioned by national and local capacity, as well by local traditions and values. The Task Force argues that low organisational and institutional capacity is one reason why the world's poorest and least developed countries seem caught in a poverty trap (ibid. 27). But it is also the result of political decisions:

Explicitly recognising the social reproduction objective of education helps explain the painfully slow progress towards full expansion of education and gender parity in some countries and the troubled history of many of the reform efforts that have been undertaken to increase and democratise access to educational opportunities. The evidence from too many countries is that without a concerted policy to the contrary, current education systems reinforce rather than compensate for existing inequalities: the children of the rich acquire more education than the children of the poor. Greatly increasing access to good education, which almost always means making societies more inclusive and egalitarian, is not necessarily the result desired by those with the power to make decisions. Education systems can be part of a vicious cycle, locking out generations of the poor. Changing those systems requires political leadership as well as additional investments and inputs. (UN, 2005b: 24)

We reach the end of this brief analysis of the enabling or disabling environment with a realization that it is a good deal more complex than deciding whether primary graduates were entering 'modernizing' or 'nonmodern' contexts or settings. There are clearly a whole series of conditions that may well seem to determine whether schools and skills are to be used productively. But this does not necessarily mean that the output of schooling is entirely determined and conditioned by its surrounding context. Our reading of the relevant literature also suggests that education can also at least influence if not help to transform the wider context in which it operates. And it is particularly the post-basic education and training sub-systems that are held to have this transformative potential.

Post-basic education and training interacts with its wider environment

The post-basic system itself contributes to the development of the wider environment beyond education as some of the above sections have hinted at – for example, tertiary education training medical professionals to strengthen the health system. But there are other ways, that post-basic education and training contribute to the environment beyond education.

Secondary education crucial for a growth 'environment'

Barro (1999) analysed data from about 100 countries collected between 1960-1995, and concluded that it was secondary and tertiary education, not primary, that has an impact on

⁷⁶ 'achieving the Goals of universal completion of primary schooling and gender parity in schooling depends, in particular, on a supportive economic environment' (UN, 2005b: 27-28).

economic environment, though there continues to be debate amongst economists on this relationship.⁷⁷

There are also studies, including the World Bank's new issues paper on secondary education, which argue that developing countries need to achieve a 'minimum threshold level of skills' in order to benefit from technology transfer from 'global leaders'.

Many studies have documented that a large pool of workers with secondary education is indispensable for knowledge spillover to take place and for attracting imports of technologically advanced goods and foreign direct investment. (World Bank, 2005c: 18)

But this is very different from assuming that the mere presence of a large pool of skilled workers somehow ushers in a knowledge economy. This is one of the problems with studies that seek to correlate secondary education and economic growth, without paying attention to the sheer complexity and variety of the East Asian versus the African or Latin American social and cultural environments.

For instance, in a study on the education and technology gap in Latin America, De Ferranti et al (2003) observed that

the bulk of the difference in computer penetration between Latin America and the East Asian "tigers"... can be explained not only by differences in the degree of trade with the OECD but most importantly by the fraction of the workforce with secondary education (De Ferranti et al., 2003). (World Bank, 2005c: 8)

In the light of our analysis of the institutional environment, we would suspect that the explanation is probably is more complicated than what is proposed.

Other positive externalities connected with secondary education

The World Bank's secondary education issues paper also points to a whole host of other positive externalities connected with secondary education, including: benefits to the child's intellectual achievement when mothers are more educated; more educated women delaying marriage and having fewer, healthier children; lower mortality rates for under fives in households where mother's have some secondary education, compared to those that have no schooling; lower risk of HIV/AIDS for those that complete secondary compared to primary completers (World Bank, 2005c). In many ways, these assertions are reminiscent of the slew of developmental impacts that were earlier associated with investing in primary education. It seems likely that these later studies suffer from some of the same correlational weaknesses that we noted for the studies of primary education.

⁷⁷ Pritchett (1996; 2001) questions the links between educational attainment and economic growth in his piece *Where Has All the Education Gone?* noting a lack of an association between growth and expanded education (Pritchett, 1996: 2). His examination of 'two recently created data sets on the education attainment of the labour force show that the growth of educational capital per worker has had no (or even perhaps a mildly negative) impact on the rate of growth of output per worker' (ibid: 1).

Tertiary education, capacity building and the wider environment

When it comes to considering the role of higher education in actually influencing the context in which human resource development is embedded, the most useful insights come from the Commission for Africa. Their perspective is not that of the economists; their concern is rather with the sources of professional skills and leadership. In their analysis of capacity, it is evident that the skills that are missing are not those associated with primary education, or even TVET, but rather with higher education. Indeed, a powerful case is made that qualified professional staff are critical to the very delivery of the MDGs and other investments. But the case is not made by arguing for the value of universities in themselves, or stating that there is a threshold level of university educated personnel needed for entering the knowledge economy; rather, the actual skills and capacities that are needed and that are missing are first sketched out in a purple passage that is worth quoting at some length:

Qualified professional staff are essential to all forms of development. The delivery of health, education and other services depends on them. They are crucial for collecting and managing data, and debating and developing good policies, based on the evidence of what works and what does not. They are essential to implementing those policies and to monitoring how they are put into effect. Scientifically and technically proficient staff are needed to identify opportunities arising from innovation and scientific discoveries and to develop effective policy in areas such as science, trade and resource management. Especially in the private sector, these particular skills are key to performance and innovation. Africa has been lacking skilled men and women in all these spheres. (Commission for Africa 2005: 137)

Only after laying out the demand for such skills is it argued that the shortage of these can be traced to deficits in higher education, ‘which ought to be the breeding ground for the skilled individuals which the continent needs’ (ibid.). It should be noted that these higher education capacities are felt to be related to accountability and good governance because the generation of independent research and debate can improve the effectiveness of government. It is refreshing to see that higher education is not treated, as it so often is, in a separate chapter on education, but it is dealt with in the same chapter as good governance, transparency and corruption, for the good reason that capacity strengthening is felt to be inseparable from good government.⁷⁸

The World Bank’s current higher education policy makes a similar argument for the way in which graduates can also influence the environment in which they operate. *Constructing Knowledge Societies: New Challenges for Tertiary Education* (2002a) notes that

⁷⁸ See King 2005 for a more detailed analysis of higher education in the Commission for Africa.

Tertiary education is necessary for the effective creation, dissemination, and application of knowledge and for building technical and professional capacity. (World Bank, 2002a: xix)

It argues the crucial importance of tertiary education, not just for developing professionals in education and health, but for creating a high level institutional capacity that is required for economic growth and poverty reduction:

Tertiary education institutions support knowledge-driven economic growth strategies and poverty reduction by (a) training a qualified and adaptable labor force, including high level scientists, professionals, technicians, teachers in basic and secondary education, and future government, civil service, and business leaders; (b) generating new knowledge; and (c) building the capacity to access existing stores of global knowledge and to adapt that knowledge to local use... Sustainable transformation and growth throughout the economy are not possible without the capacity-building contribution of an innovative tertiary education system. This is especially true in low-income countries with weak institutional capacity and limited human capital. (World Bank, 2002a: xx)

Conclusion on a two-way relationship of education and training with their enabling environments

In research terms, what is intriguing about the case for integrating education with change in other sectors in the wider environment is that, like the case for the necessary interaction of primary with post-primary education, the policy is not research-based. Unlike the hugely influential investment case for primary education, much of which was dependent on research by economists in the early 1980s, one element of which we analysed above, the argument for the essential integration of education with parallel changes in the surrounding sectors seems more to be based on commonsense and on experience. This is not to deny the vast literature on how class, the socio-economic status of families and political power affect the outcomes of schooling. Nor is it to deny that one of the best known pieces of academic research on this inter-relationship between school and the wider economy, by Philip Foster (1965), argues that it is the wider economy and labour market that determine the aspirations of pupils towards work, not the school curriculum. The reality is, we have suggested, probably very much more complex.

It is not just a question of there being more or less influence of education depending on modernising/stagnant or egalitarian/non-egalitarian environments or of education aspirations being determined by external factors – all of which are one-way relationships. More likely, as we have just illustrated, education – and particularly post-basic education and training - may itself play a part in whether an environment is actually ready to absorb change or is open to new technology, or is critical of poor governance. Intriguingly, Marlaine Lockheed, the lead author of the 1980 study on education and farmer productivity which we have analysed above, is also the main author of a book on *Primary education in India* (World Bank, 1997). Here she goes much further than her earlier

research on schooling in two different economic environments. Rather, she makes the case that the very diffusion of schooling to the mass of the population will itself be part of the reason that changes in farmer productivity will be adopted:

where the schooling of the farm population has not reached a certain threshold, the potential benefits of technical change in agriculture will not be fully realised (World Bank, 1997: 35)

In other words, Lockheed appears to accept that the relationship between schooling and the wider environment is not an 'edu-centric', one-way street, where schooling will definitely have an impact provided the wider environment has certain characteristics. More accurately, there is probably a two-way influence where the very provision of mass schooling, or mass secondary education, will itself play a partial role in determining whether the environment is enabling or not.

We would argue that currently there is very little research which looks at both sides of this relationship. There is little research in the donor community, and much less in national governments that are the recipients of aid. But for agencies committed to pro-poor growth, and to the delivery of the Millennium Development Goals, it is clearly important for them to have a view on what conditions are necessary for successful support, for example, to the Education MDGs to be undertaken. Our paper has argued that the process of assisting a country to reach the Education MDGs [universal primary education and gender equity] may well require an understanding of two other enabling environments – that of the education and training system itself, and especially the dynamic interaction of primary with post-primary provision, - and also the interaction of education as a whole with change in the larger economy. The policy of single-mindedly targeting one sub-sector, such as primary education, in order to reach these education goals may well be inadvisable.

We argued at the beginning of this piece that the politically attractive claims that schooling directly 'make a difference' to agricultural productivity (UNESCO, 2002: 34) need to be qualified in two ways. First, these allegedly developmental effects of schooling are almost certainly dependent on other facilitating conditions being present – in the social, cultural, economic and political environments. And, second, these powerful impacts claimed of education are unlikely to be present – even in environmentally promising conditions – if the quality of the schooling or the training is of a very low quality. Commonsense would suggest that a school affected by massive teacher absenteeism and low morale can have little impact on other developmental outcomes.

For education and skills to translate into poverty reduction - and growth - there needs to be the development of other factors, external to the education and training system. Hence, the extent to which the schools and skills can contribute to the development of a country's capacity will be influenced both by the development and utilisation of a that country's higher-level skills, and by the development of a supportive enabling environment that allows skills and knowledge to be utilised productively (see Fig. 1).

Among the most critical factors in such an environment will clearly be work and employment.

Fig. 1 below tries to show visually what we have been discussing above. The key point to note here is the distinction between skills and knowledge development and skills and knowledge utilisation that can lead to poverty reduction and/or growth. Developing knowledge and skills in a labour force is one thing, but if people cannot utilize these because other supportive measures are not in place, then knowledge and skills development cannot lead to poverty reduction and/or growth.

On the left, we capture the different elements of knowledge and skills development (Fig 1 below). Primary, lower/upper secondary (general and vocational/technical) and tertiary education are all affected by what we term the 'education environment', the availability of teachers, text books etc.⁷⁹ In addition to being influenced by elements of the 'education environment' on-the-job training in both the formal and informal economies is affected by the enabling or disabling environments within these respective economies.⁸⁰

Knowledge and skills development, therefore, results from the capacities that are acquired through different levels and types of education and training (seen on the arrow emerging from these different types of education and training in Fig. 1). But for knowledge and skills development to translate into knowledge and skills utilisation and therefore poverty reduction/growth, there needs to be a supportive enabling infrastructure in place.

The international environment⁸¹ impacts on the different kinds of national enabling environments: the cross-sectoral linkages⁸²; macro-economic linkages⁸³; historical, social and cultural environment⁸⁴; and the labour market environment. Perhaps the most important aspect of this enabling environment (given that work is the clearest pathway out of poverty) is the labour market environment. This might include: the growth in the economy and availability of more and better employment opportunities; the advancement, accessibility and adoption of technological capabilities; the development of an equitable 'infrastructure' for formal and informal enterprises; the presence of meritocratic access to both the formal and informal labour markets; and the availability of

⁷⁹ The Education Environment includes: *Supply factors*: Textbooks/ learning materials; Management/ Governance; Curriculum; Instruction time; Language of instruction; School infrastructure; Teacher quality/ incentives; Demographics. *Demand factors*: User fees/other direct costs; Indirect and opportunity costs; Household income; Distance; Student health/ vulnerability; Perceived returns to education (World Bank, 2005a).

⁸⁰ See Palmer (2005a) for a discussion on the environment for on-the-job training in Ghana's informal economy.

⁸¹ For example, international trade regulations, aid policy and framework, global geo-politics debt.

⁸² For example, water and sanitation; transport; health; energy; social protection; youth; agriculture; private sector development (formal and informal economy environment) (World Bank, 2005a).

⁸³ For example, civil service reform; good governance and action on corruption; poverty reduction and inclusion; social cohesion and conflict; decentralisation; political economy of reform; knowledge economy goals; resource mobilisation and utilisation (World Bank, 2005a).

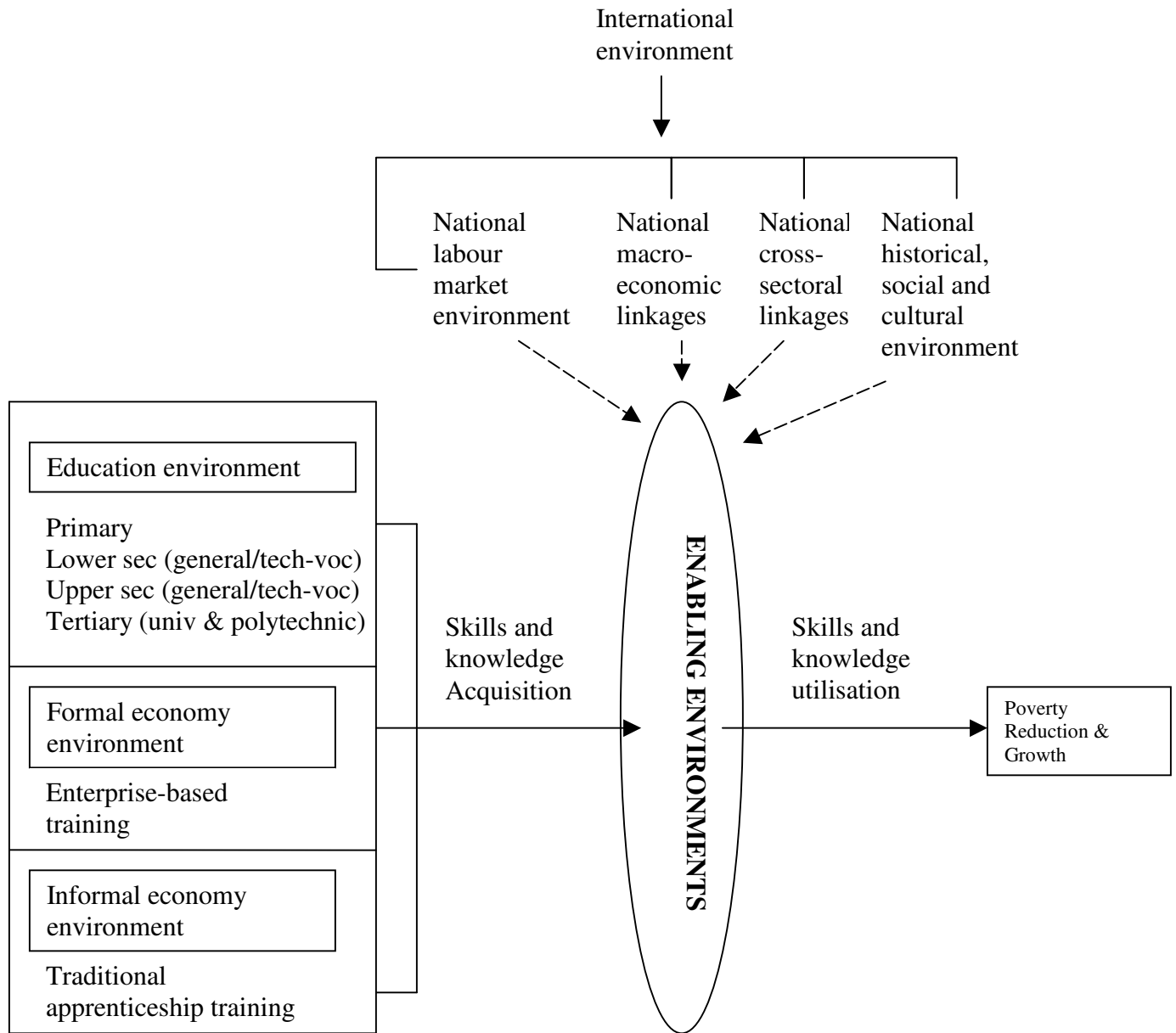
⁸⁴ For example, the development of social capital; cultural values and attitudes; societal values and norms.

financial capital. Some of these aforementioned factors (e.g. health, business, technical and knowledge environments) can be developed through higher-level learning as we noted earlier. But many other factors can be influenced, only in part, by higher-level learning.

If, in conclusion, there is to be new research on the issues that we have explored in this paper, then it will need to begin to explore new ways of capturing the crucial role of the enabling or disabling environments in affecting how education and training are actually utilized. This will not be a question of reproducing more research like that of Lockheed, Jamison and Lau, valuable and influential though this was in its day. Rather, it will need to move from the 'edu-centricity' of such research towards work that will capture something of the complexity of the social, economic, cultural and political environments in which education and training investments are constantly being affected.

This will not be research, therefore, that measures how education and skills can help break the cycle of poverty or how a certain threshold of secondary education can assist a transition to the brave new world of the knowledge society. But it will be research that will need to develop new tools and artifacts that capture the complexity of the wider environment, while bearing in mind, also, that school and skill are much more than years of education.

Fig 1 Translating Skills and Knowledge Development into Poverty Reduction and Growth



Source: Palmer

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