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Literacy for Life

Strategies and policies for literacy

Helen Abadzi
Operations Evaluation Department
World Bank
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Executive Summary

Despite the existence of about one billion illiterates in the world, adult literacy programs make up 1–5 percent of government or donor budgets, and they remain severely underfunded in comparison to primary education. They have had a long and disappointing history of high dropout and low achievement. Overall, many of the 1970s campaigns had efficiency rates of about 12.5 percent, with few participants acquiring stable literacy skills.

The 1990s brought new strategies that included empowering NGOs and focusing on existing groups and on management improvement for governments and cooperating organizations. The numbers of participants increased, while dropout and course completion rates improved as a result of increased attention to management. However the outcomes of literacy instruction are still modest and may have improved little since the 1970s. Social benefits are also uncertain.

The 1990s have provided some important lessons for future strategy development:

- NGOs are indispensable but require government supervision. Therefore, government capacity building is imperative.

- Literacy classes are most sustainable in decentralization conditions, when community leaders agree to training, encourage their members to participate and may themselves appoint the teachers

- Lifelong learning may indeed have high rates of return, but the private sector has been effective in providing vocational courses, and perhaps government has a lesser role to play.

- The cost of adult programs varies greatly and is hard to determine. Low unit costs often are for programs with volunteer teachers; and cost per graduate actually becoming literate may be considerably higher. Adult literacy costs may compare well to primary education costs, but on a per-hour basis they tend to cost more. The favorable comparison may be due to the low efficiency of primary education.

- Many participants of literacy classes are school dropouts, and these may increase as Education for All pushes the poorer people to enter low-efficiency schools. This group may require specific help to maximize what they learned at school, and perhaps should not be treated along with other illiterates if it is possible to teach them separately.

To reduce the multiplication of illiterate school dropouts, children's primary education must become much more efficient than it currently is and make much better use of available time. In countries where children are at risk of early dropout, efforts should be made to spend all available time in literacy and numeracy so that children can become fluent readers by the end of grade 2.

Governments and donors expect that once taught, people will have usable skills and remain literate. The inefficiency of the interventions makes it hard to increase coverage and to argue for increased expenditures for this sector. This may be one reason why governments and donors are still ambivalent about financing adult literacy. A vicious cycle is created, whereby low-cost programs have disappointing outcomes and receive limited financing. The contribution of adult literacy programs in increasing literacy rates in various countries thus far has been

marginal. Given its current scope and efficiency, this educational vehicle probably *will not contribute significantly* to a 50 percent reduction in adult illiteracy rates by 2015.

The modest results may be partly due to certain features of human memory, which have important implications for adult literacy acquisition. To comprehend text, people must be able to read fast and effortlessly, at least one word per 1-1.5 second. Adults may have some difficulty in achieving effortless reading. If a substantial number of neoliterates cannot read a few months after training, literacy instruction is seen as inefficient. A vicious circle of low financing and low efficiency may be created.

To be effective, reading instruction needs to conform to the way the brain processes reading patterns, and techniques such as phonological awareness training and increasingly faster reading tasks for participants may be effective in improving skills. However, few adult educators know the relevant issues and techniques. The lack of sufficient preparation on these issues poses some policy and strategy problems. Clearly there is a need for vulgarization and greater dissemination of the issues that affect literacy acquisition.

Literacy instruction that will result fast, effortless, and sustainable reading skills may require larger expenditures for teacher salaries, training, and materials than currently planned. Although literacy instruction generally incurs low costs per participant, the costs per graduate made permanently literate are higher. The cheapest programs depend on a volunteer teacher corps, which may be unstable. A vicious circle may be created, whereby cheap but ineffective programs disappoint financiers and preclude more expenditures that might make them more efficient. Countries that decide to engage in adult literacy should consider their long-term commitment and should determine the extent to which they are willing to fund more effective but also more expensive programs.

I. Lessons from Adult Literacy Programs – The Basics for Policy Development

Adult literacy is highly relevant to poverty alleviation because people must be able to decipher a script code quickly, understand the contents of the documents, and decide upon options transmitted in them. Thus, the Education for All goals include “*achieving a 50 percent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults.*”

Clearly, the EFA goals will not be met in at least 28 countries unless the pace sharply accelerates.¹ Worldwide, over 100 million children are still out of school, and an undetermined number of others attend school for only 1 or 2 years. Instructional time in the schools of the poor tends to be limited, and dropouts are often illiterate. Unschooling or under-schooled children are the next generation of illiterate adults. So, as they slip through the schooling efforts, nonformal programs should be in place to capture them and efficiently teach them their country’s literacy code and related basic skills. Thus, *effective and efficient* instruction in basic adult literacy is needed more than ever.

The problem is that adult literacy programs have not been very effective. In the 1960s-1970s, many countries carried out literacy campaigns; but these early programs offered government-led, top-down and brief courses without follow-up and made few people literate. A minority of eligible participants enrolled, and of those about 50 percent dropped out. Of those who stayed on, about 50 percent passed literacy tests, and of those about 50 percent were estimated to have dropped back into illiteracy. Overall, many of the 1970s campaigns had efficiency rates of about 12.5 percent, with few participants acquiring stable literacy skills.²

The difficulties of the early adult literacy programs³ prompted reflection in the donor community in the 1980s regarding whether adults really needed to be literate. One school of thought argued that people need basic skills for living rather than literacy per se.⁴ Also, an expectation developed that universal primary education would expand rapidly, and that literacy programs would become unnecessary, so many donors declined to finance them in the 1980s. However, it became obvious that access to primary education itself is linked to parental literacy and that universal primary education is going to take much longer than expected. Thus donors such as the World Bank resumed financing adult literacy in the 1990s.⁵

The donor-financed projects in the 1990s learned many lessons from the failures of the 1970s. They financed instructional delivery through NGOs, which seemed to retain participants

¹. Education for All Global Monitoring Report, 2002; Education for Dynamic Economies 2001.

². UNESCO//UNDP 1976. The literacy programs discussed in this document were not random, and results may have been presented in an effort to neutralize the effects of socialist literacy campaigns (Jones 1988).

³. A review of 92 World-Bank financed projects which 49 percent financed adult literacy, while 77 percent financed rural skills development and income generation concluded that the unsatisfactory outcomes were due to limited financing and neglect (Romain and Armstrong 1987.) Eight adult literacy projects considered successful had strong country commitment, institutional support, strong materials support, and availability of counterpart funds.

⁴. Iredale 1994.

⁵ Many literacy programs are financed by governments and NGOs without external aid and some may target just a few hundred people. Main donors include UNESCO, UNICEF, bilateral agencies, such as Canada, Norway, Netherlands, United Kingdom, and large international NGOs, such as Africare, Plan International, Aide et Action, and Oxfam. In addition, a multitude of small local NGOs and communities are involved. Occasionally, the Asian and African Development Banks finance adult literacy.

and appeared to be more efficient to get the NGOs to do the work (an approach called “faire faire”). Government institutions were to be used mainly for policy and monitoring, developing eligibility criteria for screening NGOs, financing programs of qualified organizations, providing textbooks. There was an effort to generate user demand, particularly to reach organized groups of workers, such as cooperatives and where possible, link literacy with microcredit as well as with income generation and rural development. Literacy is now typically taught in local languages, and course length is often about nine months (followed by post-literacy when possible). Women and out-of-school adolescents are usually targeted specifically.

How well have the policies of the 1990s worked and what do they imply for the strategy of the next decade? Here are some lessons and their strategy implications.

Learner Demand Generated through Improved implementation

Implementation experience has improved since the 1980s. For example the World Bank’s literacy-only projects of the 1990s were largely implemented as planned, and their outcomes were rated satisfactory by the Operations Evaluation Department. Altogether, they reached about 11.8 million illiterates and showed that it is possible to bring large numbers of people to classes. The classes in the large Bank-financed projects of Ghana and Senegal were overall much in much demand, and many more people enrolled than expected. The Senegal project, for example, closed one year earlier than expected because it had spent all its funds. Success in meeting targets is an important foundation for future expansion of programs.⁶

Women constituted the majority of the beneficiaries in these programs. For example, they were 64 percent of the learners of the Bangladesh program. Despite anecdotes of prohibitions, it seems that adult literacy classes are a socially acceptable venue for women. The problems that exist are often a function of the large amounts of work that women must do and the health problems among the poor (such as lack of iron, which reduces cognitive processing)⁷

Uncertain Learning Outcomes

Learners are often school dropouts. Previously schooled people may make up 25-31 percent of the learners⁸ Under certain conditions literacy courses serve as “finishing school” for motivated school dropouts. This may be important in countries with high dropout rates, such as many African countries. For example, the well designed and extensive evaluation study carried out in Uganda in 1999 showed that 73 percent of the sampled graduates had been to school (for an average of 4.5 years), as had 35 percent of the nonliterates (average 3.5 years). In some countries that have greatly increased enrollments among the poor and the girls, students’ reading achievement is low.⁹ In Guinea,¹⁰ Niger, Burkina Faso, and Uganda,¹¹ for example, little is

⁶ For a review of World Bank adult literacy projects and outcomes see Abadzi 2003a.

⁷ Tamura et al., 2002, Levinger, 1992

⁸ Oxenham 2004

⁹ Moulton et al. 2001.

¹⁰ Barrier et al. 1998. The students scoring at or above 75% in French reading and math were : 15% and 11% in grade 2, 10% and 5% in grade 4, and less than 5% in grade 6. OED mission observations in 2003 confirmed that many students about to graduate from primary school could not read or explain what they read.

¹¹ National Assessment of Performance in Education, 1999. The percentages of students scoring ‘adequate’ or better were in grade 3 18% for English and 39% for math, and in grade 6, 15% for English and 42% for math. Only 3% of rural student scores in reading were considered ‘adequate’.

learned in each grade and the majority of students are functionally illiterate at the end of grade 6. Students are at a particular risk when instructional time is cut short to add more students (“split-shift” classes). In the poorest countries textbooks are often stolen from schools and sold in the street, thus leaving students without a chance for practice. Furthermore, foreign language immersion for young poor rural children often has an adverse impact,¹² while literacy is typically delivered in local languages. Thus, participants do not have to struggle to understand basic information in a foreign language, as children do in primary schools. **The incidence of schooled people in literacy courses has important policy implications for the countries attempting to achieve EFA.**

The extent to which participants learned to read and remained literate is uncertain. Some available data on 32 literacy projects financed by various donors since the 1990s are presented in Table 1.¹³ Data problems are severe¹⁴ but some comparisons and conclusions are possible. Of the programs for which statistics were available in 2002, **the median completion rate was 78 percent, median attendance (five programs only) was only 62 percent, and pass rate of a final test was 56 percent.** Relapse into illiteracy is rarely reported; some neoliterates can read years after instruction (for example the mainly previously schooled participants in Uganda), but only 12-60 percent of graduates sampled from other programs met literacy criteria later on (e.g. in Ajmer-India, Bangladesh, Kenya). Some types of learners seem to have better outcomes than others, but overall performance is very modest. Even when graduates remember the mechanics of reading, evidence suggests that they may understand little of what they read.¹⁵ Overall, **course dropout and completion rates seem to have improved, but pass rates are about what they were around 1976, and long-term outcomes are uncertain.**

Even these modest results have questionable generalizeability because learners are typically self-selected. Thus they may be more intelligent, knowledgeable, or motivated at that period of their lives. It is unknown how illiterates of average or below-average ability and motivation would perform. The limited learning outcomes of Total Literacy Campaigns of India and Bangladesh may offer a hint.¹⁶

¹² (e.g. research by Thomas and Collier, 1997). Also, students learning to read in a foreign language, particularly one with irregular spelling, like French and English, do not benefit from the word superiority effect in to identify letters faster from the context.

¹³ The 32 programs reviewed were reported in three World Bank documents published since 2000, but are not necessarily representative of programs worldwide. The documents are: (a) Basic Education and Livelihood Opportunities for Illiterate and Semiliterate Young Adults (BELOYISA; Diagne 1999); ‘Engaging with Adults (Lauglo 2001); ‘Including the 900+ Million’ (Oxenham 2004 draft and earlier drafts).

¹⁴ For example, only 13 of the 27 evaluations examined by the BELOYISA project reported on mastery of skills, and they used different methods to assess participant learning. Due to differing testing criteria, these statistics are not really comparable. There are usually no research designs to establish cause-effect relationships. Studies publish few instructional details or information about frequency and duration of classes, how instruction is carried out, or how efficiently class time is used. Documents do not report correlations between various non-literacy benefits (such as self-confidence) and reading performance, previous schooling, age, or number of hours of actual instruction. No research was found that controlled for the effects of prior knowledge or instructional quality. No studies were found that attempted to guard against the selection and attrition threats to the internal validity of the research or try to estimate them. Little long-term research exists, such as panel studies to measure performance of graduates and literacy’s long-term impact on their welfare. Typically learners were self-selected into programs.

¹⁵ Okech et al. 1999.

¹⁶ Oxenham 2004 as well as many reports of these campaigns, that succeeded in bringing almost everyone in a village who was not handicapped to literacy classes.

Due to modest efficiency, **the long-term effect of these programs on adults' ability to read may be marginal.** The EFA goal of reducing illiteracy by 50 percent by 2015 may not be achievable in the current state of these programs. To make and keep people literate, much additional emphasis must be put on instructional issues.

Table 1: Efficiency Indicators Reported in Some Adult Education Program Evaluations

<i>Project</i>	<i>Attendance Rates^a</i>	<i>Completion Rates^b</i>	<i>Tested Pass Rates^c</i>
PRE-1975 GOVERNMENT PROGRAMS			
- UNESCO/WOALP Iran ^d 1972	--	81.4%	64%
- Turkey Government with primary school teachers, 1971–72 ^d	--	67.6%	56.4%
- Thailand Government 1971 ^d	--	87.4%	--
POST-1975 GOVERNMENT PROGRAMS			
- Kenya (1980–85) ^e	49.3%	-	5%
- program of 3096 participants		48%	29% reading, 21% writing
- Namibia (1992–99) ^f		--	
- 92/99 Stage 1	--	--	73%
- 93/99 Stage 2	--	--	79%
- 93/99 Stage 3	--	--	71%
- 1996 evaluation	-	70%	55%
- Nepal ^g	--	50%	40%
- Mozambique—multidonor project	-	43.4%	-
POST-1975 GOVERNMENT PROGRAMS SUPPORTED BY THE WORLD BANK			
- Indonesia ^h (1977–97)	--	78.7%	--
Level 1	--	87.8%	--
Level 2	--	90.8%	--
Level 3	--	88.1%	--
Level 4	--	80%	17-27%
- Ghana ⁱ (1992–97)	75%+	89.9%	-
- Senegal (1996-2002)			66% reading 92% after course
- Bangladesh—multidonor project)	10% (estimated)	-	33% (later, 2 samples)
NONGOVERNMENT PROGRAMS			
- ActionAid REFLECT (1996)			
Bangladesh	45.4%	77.9%	60.0%
El Salvador	--	75.0%	67%
Uganda	--	69.0%	--
- ActionAid Control	--	--	88%
Bangladesh	--	55.1%	25.4%
El Salvador	--	40.0%	--
Uganda	--	75%	56%
- ActionAid REFLECT (1999)			
Bangladesh	44 - 92%	70 - 100%	--
- World University Service REFLECT			
Sudan (1999)	--	48 - 100%	--
- Nijera Shikhi ^k (Bangladesh) tested after one year	-	75%	56%
- Save the Children/ USA, Kolondieba. ^l (Mali) October 1998—May 1999, 11 groups with between 4 and 8 months instruction	47-100%	Overall 97.5%, Range 86-100%	---
- Gambia ^m			20%
Median values of reported statistics	62.15%	78%	56%

a. The general unreliability of attendance records has prevented most programs from including class attendance rates in their reports. A review of 27 programs (Diagne, World Bank, 1999) found that only three mentioned attendance rates.

b. Completion rates indicate the proportions of enrolled participants reported to have formally completed the prescribed course, but do not indicate whether or not they achieved satisfactory levels of attainment.

c. Tested pass rates indicate the proportions of enrolled participants reported to have passed whatever tests of achievement the program set. Many learners do not take them, and results may not be indicative of achievements.

d. Oxenham 1974, p. 66. Oxenham's figures for Turkey were taken from the instructors' registers and numbers of tests submitted.

e. Carron et al. 1989, p. 37-38, Tables II.3 and II.4. and p. 94, Table IV.21. A similar report on the literacy program in Tanzania found the reported statistics so unreliable that it declined to use them.

f. Lind, A., 1996, p. 70-71; Government of Namibia, 1999, Ministry of Basic Education and Culture, Directorate of Adult Basic Education, The National Literacy Program in Namibia: Statistical Information.

g. Comings et al. 1992, p. 212-226.

h. Directorate of Community Education, 1998, Impact Evaluation of Nonformal Education Program in Indonesia.

i. Implementation completion report on Ghana Literacy and Functional Skills Project, 1998.

j. Senegal : Pilot Female Literacy Project. Implementation Completion Report , June 2002.

k. Archer and Cottingham 1996.

l. Saldanha et al. 1999.

m. Mace 1999.

n. Cawthera 1997.

o. Sanogo et al. 1999.

p. BELOISYA (Diagne, p.11)

Source: Table adapted from "Including the 900+ Million" 2001 draft.

Social Benefits Are Also Uncertain

The effects of literacy on people's quality of life, health, fertility, and productivity are well known when these have been acquired in primary schools. Many programs teach life skills along with literacy. There are several reports of improved social indicators (Oxenham 2004), but their generalizability is uncertain. For example, the beneficiary assessments of Ghana, Uganda, Kenya, and Tanzania suggest that relatively few graduates change attitudes or behave according to health messages transmitted during literacy courses, even though they may know the messages. However, participants of literacy programs are more willing to send their children to school (Valerio 2003).

Other benefits may be more effective oral (and sometimes written) communication, decontextualized language use, improved family health, more productive livelihoods.¹⁷ It appears that implementers assume that illiterates know nothing and often do not find out how much world knowledge adults actually have. It seems that to obtain social benefits, much better targeting to knowledge and interests is needed.

The Cognitive Deficits of Illiterates May Inhibit Empowerment

A body of neuropsychological literature exists that is unknown to educators, but it may have significant strategy implications.

Once literate, people should be able to make informed decisions and thus become more empowered, but ultimately empowerment is a function of their decisionmaking ability. There are many reports about increased self-confidence and empowerment but they are hard to document, especially if beneficiaries later lapse back into illiteracy. Their generalizability is suspect, however, because the unschooled perform less well in essential memory tasks linked to decisionmaking: recalling a series of digits backward and forward, remembering lists of words, reproducing a short story or complex shapes, using readily available data for deductive reasoning. These abilities are developed in the first three years of primary school, but merely attending a literacy class does significantly improve them. Changes in cognition during life are affected by education. **The first three grades of schooling seem to have the most significant effect** on these cognitive variables; .¹⁸ Research suggests that performance in such tasks can improve through exercises added to literacy classes, but these have not been widely implemented. The only experience thus far has been a program implemented in Colima, Mexico.¹⁹

Decentralizing Literacy Decisions to Community Groups is Well Regarded

Efforts to convince various community groups to make their members literate have met with much success. These may include microfinance institutions, women's cooperatives, burial societies,²⁰ and Total Literacy Campaigns. Tight social groups, particularly in rural areas, can

¹⁷ Nepalese women's knowledge of family planning, HIV/AIDS, and awareness of sexually transmitted diseases increased for participants in a literacy class but not for a control group (Burchfield et al. 2002).

¹⁸ Ostrosky-Solis et al. 1998; Ardila et al. 2000(b).

¹⁹ Besides basic literacy, Neuroalfa taught phonological awareness, semantic categorization, finding similarities, interpreting objects drawn on paper, verbal memory, and abstracting abilities. The program involved 21 learners, ages 16–50 (mean age 33), and was taught in 40 hours over three months, three times weekly. Results were compared to those of two traditional methods of teaching literacy. After literacy training, the experimental group improved in most neuropsychological tests (though not in motor function tests), and it had higher reading scores, particularly in comprehension. It also improved in time orientation, calculation, and deducing the sequences of various figures, which had not been specifically practiced. This method, if investigated further and expanded would be useful to those taking literacy classes only.

²⁰ Easton et al. 2004

pressure their members to participate and also not to drop out. Accountability may increase if they select their own teachers and set their own schedule of classes. The agreement of local authorities is very important.²¹

To improve literacy outcomes, livelihood skills and microcredit have been included in various projects. Often, participant groups are first taught skills that help their work, and they may progress to literacy only when they decide that they need it (an approach called “literacy second”). There are many reports of people getting economic benefits.²² However, the evidence of economic outcomes for these programs is not very positive;²³ participants report some income improvements when asked, but these outcomes are not verifiable. There is little empirical research to prove that adult literacy programs enable unemployed learners to obtain new jobs or to make major career changes. One problem is that literacy instructors are usually not qualified to teach livelihood skills, and hiring special instructors often proves difficult and expensive. Overall, evidence from developing countries indicates that *adult literacy programs rarely lead to actual economic improvements in participants’ daily lives.*²⁴ Nevertheless, **participants are very much interested in learning how to handle money and how to avoid being cheated.** More emphasis on numeracy and business management seems an important avenue for the future. Though numeracy can be used to attract participants, clear manuals must be written for teachers, because many are weak in numeracy.

NGOs are Indispensable but Require Government Supervision²⁵

Availability of funding has encouraged some NGOs to be formed and vie for it or to expand into literacy beyond their areas of expertise. On some occasions (such as the Senegal Pilot Female Literacy Project), private persons may provide literacy instruction. Though this may be a legitimate means to teach large numbers of people, it is unclear which persons and NGOs are effective in teaching literacy. Larger NGOs may have better outcomes (Table 2). The Bank-financed Indonesia and Ghana project reports indicate that the pedagogical support services to NGOs were not effective in improving outcomes.

Implementing literacy agencies and NGOs tend to have weak and possibly unreliable record-keeping, and often lack clear records regarding their participants and their progress. Sometimes data may be inaccurate or falsified, as in the Bank-financed Ghana project) Elsewhere NGO teachers may pool classes of multiple centers or appoint low-paid assistants in their stead (as in Bangladesh). Some programs do not give final tests, and neoliterates are merely asked whether they have become literate. Participants are rarely retested after a lapse of time. Thus pass statistics may be inflated.

Table 2: Effectiveness data of NGOs by capacity to conduct classes

Capacity of	Reading: %	Writing: %	4 Arithmetic	Problem
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²¹ Nordtveit, 2004 p. 28

²² Oxenham 2004, draft.

²³ Oxenham et al. 2002. Female literacy participants reported increases in an index of social and economic development (Burchfield et al. 2002), but it was unclear what behaviors were associated with this development.

²⁴ Wagner 1995, p. 342-343; Oxenham 2002.

²⁵ Diagne, Amadou Wade. 2001. Programme de formation sur la stratégie du ‘faire faire’ en éducation des adultes. Dakar: Ministry of Literacy, May 7—July 5, 2001.

Contractor	participants passing	participants passing	Operations: % participants passing	solving: % participants passing
Up to 20 classes	74.6	60.5	59.1	41.3
More than 20 classes	78.9	70.8	70.1	59.3

Source: Oxenham 2004 citing Camara and Sow.2001.10

Government Capacity Building is Imperative

NGOs and grassroots organizations are indispensable. **However, reliance on these groups would not satisfy the targets to which the donor community is committed.**²⁶ The literacy programs that performed best used grassroots organizations but had strong central institutions in charge, that furthermore were stable (as in Indonesia). Where such institutions were politicized or leadership changed often, the programs were much less effective (eg. Ghana and Bangladesh; Oxenham 2004). Governments must at least provide an encouraging framework within which voluntary and community associations develop the capacity to reach program participants, train teachers, produce and distribute large quantities of materials, supervise, and monitor. The latter functions are very important, because without them data (as shown earlier) are not reliable enough to permit decisions. Monitoring has not worked well in literacy programs. Teachers may not keep rolls updated, and supervisors may not satisfactorily support 15-20 classes. Where voluntary and community-based programs are not feasible, governments may have to implement nonformal basic education directly.²⁷

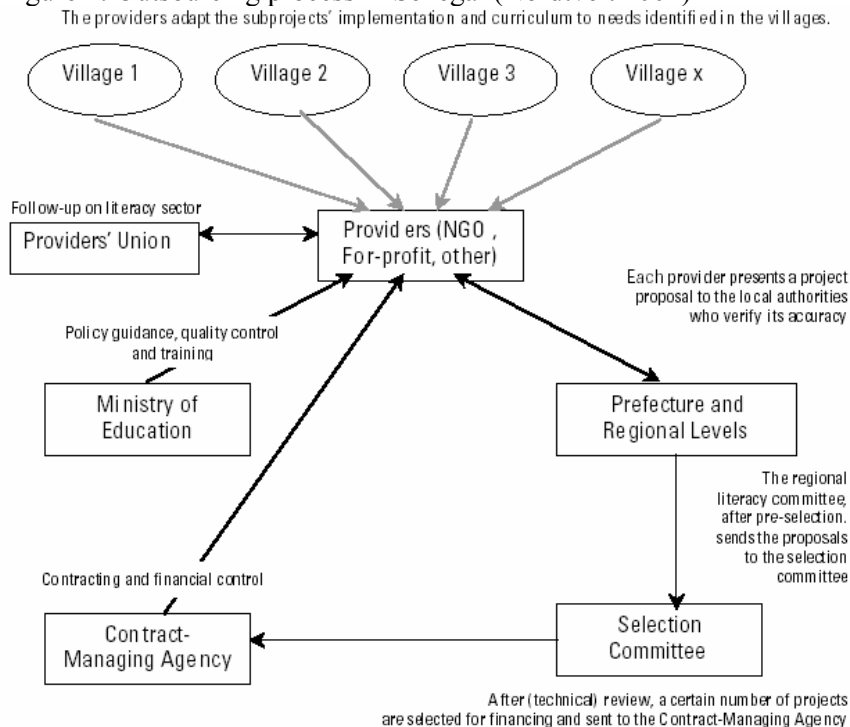
Outsourcing and public-private partnerships are certainly desirable, but carry a lot of complexity. For example, the World Bank-financed projects of Senegal and Gambia had multiparty arrangements to make funds flow to the village level while keeping some measure of accountability (Figure 1). Governments must be able to oversee such complex arrangements. There have been significant problems linked to financial management and transparency in public offices, and they need to be addressed before setting up an outsourced program.

Outsourcing is not a quick fix for mismanagement of public funds. It is also not necessarily conducive to improving quality. Despite the efforts, Senegal program participants scored low in literacy tests (Table 1).

²⁶ Oxenham 2004

²⁷ Oxenham 2004.

Figure 1: Outsourcing process in Senegal (Nordtveit 2004)



Ultimately it seems that governments must play these roles and introduce reliable (probably sample-based) monitoring designs. **It seems impossible to do away with the role of government altogether; quite the opposite, the modest results of programs indicate that governments must become much more involved and proactive in quality control.** Therefore, donor projects should strengthen both government and nongovernment agencies.

Lifelong learning – A Suitable Prospect for the Private Sector

Clearly globalization and constant change of jobs means that people may have to be trained multiple times in their lives. There is a large variety of vocational and technical training courses in the government and private sectors (Table 3). However, these programs are a rather different issue than basic literacy, partly at least because those who are likely to be included are fluent readers and have had successful schooling experiences at least to some extent.

One study (McMahon 2003) found that private rates of return to individuals tend to be relatively high, especially for employer-sponsored training. But given low education levels, many individuals are not selected for training and do not have their own financial resources. Employers do not make enough training available, since private rates of return to employers are low, especially for general training, and many employers are poor. Little is likely to happen without public, and/or donor intervention. But high social benefits, and low costs mean that social rates of return are also high, especially at primary, and secondary levels. This justifies increased total investment at these levels, including employer-sponsored OJT and apprenticeships, with total costs shared among individuals, employers, and government. Since the private sector has responded to vocational training needs, governments may only have to play a monitoring, certifying and partial financing role.

Table 3: Lifelong learning prospects in various parts of the world

Region	Post-Schooling Investment in Lifelong Learning (Employer-sponsored OJT, Apprenticeships, Separate Formal Equivalency, and VOTEC for adults)				Formal Education Investment in Lifelong Learning (Via Increased Enrollment Rates and/or Improved Quality* in Developing Countries)		
	Private Rates of Return to				Private Rates of Return to the Individual		
	The Individual		Employer				
	Private Market Rate (1)	Private Non-Market Rate** .8x(1)x.27 (2)	Total Private Mkt+NM Rate of Return (3)	Private Market Rate (4)	Private Market Rate (5)	Private Non-Market Rate** .8x.(4)x.27 (6)	Total Private Mkt. + NM Rate of Return (7)
Africa							
Primary	32.4	7	39.4	8	38	8.2	46.2
Secondary	21.2	4.6	25.8	6	25	5.4	30.4
Higher	23.7	5.1	28.8	4	28	6	34
Latin America							
Primary	20.3	4.4	24.7	13	27	5.8	32.8
Secondary	12.8	2.8	15.6	8	17	3.6	20.6
Higher	14.3	3.1	17.4	9	19	4.1	23.1
Southeast Asia							
Primary	19.1	4.1	23.2	13	20	4.3	24.3
Secondary	15.3	3.3	18.6	7	16	3.4	19.4
Higher	17.2	3.7	20.9	8	18	3.9	21.9
OECD							
Primary	29.5	6.2	35.8	6	13	2.8	15.8
Secondary	25	5.4	30.4	6.5	11	2.4	13.4
Higher	NA	NA	NA	6	12	2.6	14.6

Source: McMahon 2003

The Cost of Adult Literacy Programs – Hard to Determine

It is really not possible to compare programs, because different components and options are entered in each, and they have different costs associated with them. At least two detailed studies have undertaken to identify unit costs, and they come up with large ranges and different amounts, even within programs. Below are some examples of costs.

In a sample of 27 evaluations for example, *unit costs per participant* ranged between US\$12 (just instructional expenses) and US\$1,246 (including development costs, international consultants and travel).²⁸ *Unit costs per completer* ranged between US\$61 (instruction only) and \$984 (including development costs). Other data indicate that the unit costs of adult basic education programs vary from US\$1.93 per participant in strictly voluntary programs up to US\$37, when various levels of paid staff are included.²⁹ For example, the REFLECT program, which enrolled 140,000 students in 26 out of 45 districts in Uganda, reported unit costs of US\$4–5 per year, when teachers were volunteers, but US\$13–14 when they were paid.³⁰ The World-Bank financed Indonesia program cost about US\$90 in 1991, with volunteer teachers and organizers. **Costs per participant may underestimate the cost of literacy instruction.**

²⁸. BELOISYA 1999 (Diagne p. 14).

²⁹. Oxenham 2004.

³⁰. Lauglo 2001, p. 33.

The low per-participant costs are presented as an argument in favor of expanding nonformal education,³¹ but they rarely represent all costs associated with literacy provision (See indicative lists in Tables 3 and 4). Development costs and organizational costs are significant. The large monitoring and administrative institutions behind them have recurrent expenditures, which may not be included in the calculations. For example, the funds devoted to building up the Indonesia and Ghana administrative structures took up 30 percent of the total project costs, whereas the Senegalese administration cost less. NGO programs appear have lower unit costs than government programs when the unit used is some measure of outcomes³² but in Ghana and Senegal private providers proved more expensive.³³

One implication is that formal and nonformal education compete for the same funding, and perhaps expenditures on children should be preferred over expenditures to adults, who have a more limited lifespan.

Efforts have been made to **compare nonformal and formal education costs**. Oxenham (2004) compared cost data available from eight programs and concluded that the unit costs of a program range from a high of half those of a country's primary school annual unit costs to a low of about one-seventh. In Nepal, a graduate of a 9-month adult literacy program can master the skills of a 5th or 6th grade primary school student.³⁴ Data from Ghana, Bangladesh, and Senegal (Table 3) indicate that adult literacy courses cost only 26-66 percent of primary school costs, but it this is only under the assumption that adults will become and stay literate through courses of 300-400 hours compared to children's courses that last in principle about 3000-4000 hours. On an hourly basis, however, literacy courses cost more.³⁵ Ironically, adult literacy costs compare at first glance well with primary education because the latter often involves wastage, low quality, and high dropout to the extent that students must reach grade 4 to be considered literate.

Table 3: Comparative Costs in World Bank-financed Literacy Projects

Ghana Adult Literacy and Functional Skills Program (1992-1997)¹ (Actual)	Ghana National Functional Literacy Program (2000-2005)² (Planned)	Senegal Projet Alphabétisation Priorité Femmes (1996-2002)³
Basic Literacy Materials 8.95%		Instructional material 24.9%
Support to facilitators and supervisors 4.53%		facilitator salaries 35%
Research and evaluation 6.08%	Monitoring, evaluation and research 2.98%	Monitoring 1% Evaluation 1%
Institutional strengthening 69.98%	Management and Institutional enhancement 13.68%	Institutional support 8%
Infrastructure ⁴ 3.66%		Equipment 9%

³¹ Lauglo 2001, p. 25-26.

³² Cobbe et al. 2004

³³ Nordtveit 2004. The Senegal Women's project included partial cost recovery of 2,500 FCFA per participant in cash or in-kind. Women's associations often paid for their members. Informal interviews by the author suggested that dropout was not due to cost.

³⁴ Comings et al. 1998.

³⁵ Oxenham 2004 draft p. 77

Radio 6.8%	Radio component 4.48%	
	Basic Literacy (operations) 56.47%	
	Literate environment 2.74%	
	Non-Formal Education Department, Ministry of Education staff emoluments and administrative costs 17.41%	Training of personnel 11%
	English pilot 2.24%	Other 10%
Total % - 100.0	100.0	100.0

Source: Oxenham 2004. Notes :

1. Source. World Bank 1999-A.34
2. Source. World Bank 1999-A.31
3. Source. Camara & Sow. 2001?.56-57

'Infrastructure' here represents the construction of a new office complex for the government department responsible for the program. Additional infrastructure was not necessary for G-2.

The amounts and percentages vary, but it appears that teacher pay and institutional support are the bigger expenditure items. In designing a new program, it would appear that teacher pay and capacity building would have the highest costs (Table 4).

Table 4: Possible Indicative Framework for Cost Distribution of in Literacy Programs

Item	Rough % to be allocated	% (cumulative)
1- Instructional materials	13	13
2- Training [and refresher training] for literacy facilitators, business trainers and immediate supervisors	15	28
3- Remunerating facilitators, business trainers and field supervisors	30	58
4- Training and other forms of capacity building and institutional strengthening for public and private agencies	13	71
5- Operational and administrative expenses [offices, vehicles, lighting, fuel, consumables]	15	86
6- Monitoring, evaluation, research	4	90
7- Savings, credit and enterprise development	10	100

Source: Oxenham 2004

Teacher (Facilitator) Pay Should be Adequate

Because the literacy task is large, it is important to keep salary costs low. Considerable literature exists regarding the pros and cons of paying teachers,³⁶ and the conclusion is that they should be paid if programs are to be sustainable. Volunteerism is not an easy way to staff a program, especially a long-term program. For example, 170,000 volunteers were permanently needed in Indonesia; the turnover rate was high, and many demands (such as record keeping) could not be made of their time. In Bangladesh, it was also found that teachers were hard to sustain without sufficient remuneration. Ironically, the civil servants who staff the nonformal education departments receive regular salaries and training to oversee the programs, but the poor who actually deliver it receive very little.

If volunteer teachers are used programs appear inexpensive, but costly inefficiencies may be introduced. Teacher absenteeism, classroom wastage are important issues to consider. Money saved by not paying teachers may have to be spent on paying administrative staff to handle the turnover and on additional courses to teach those who have failed. If teachers are trained and paid sufficiently, the quality of the programs may improve, but their cost will also rise.

Cheap and ineffective or more effective and unaffordable?

Given the low efficiency of programs in making people literate, the race to the bottom is not very encouraging. The donor community and governments must face the possibility that spending more on categories such as training and teacher salaries could improve effectiveness. For example, primary school teachers should be paid about 3.5 times the per-capita GDP to be sustainable. There is no specific reason why literacy teachers should be paid commensurably less.

But costs are problematic because large numbers of people do not become literate in a short period. Adult education requires a long-term investment and some “recycling” of participants. Participants may take classes more than once.³⁷ Where reading opportunities are limited, participants get little daily-life practice. Thus, it may not possible to make large numbers of people permanently literate over a short period of time and be cost-effective. If most participants became and stayed literate, governments might be willing to spend more. But the limited effectiveness of the programs urges caution, and there is continuing ambivalence toward financing such activities despite rhetoric to the contrary.³⁸ Thus, literacy budgets in many countries are just 1–2 percent of education budgets.³⁹

Nevertheless, more research into costs is needed. For example, the contribution of various expenditure categories to program effectiveness must be explored. Do more people become and stay literate if teacher salaries are increased or if more materials are handed out or more supervisors check class function? The Global Monitoring Report could undertake more work on the cost-effectiveness of different literacy programmes and policies.

³⁶. For example, Rogers 1991. In the 1970s, efforts were made to pay teachers according to the numbers of people made literate (e.g., in Nepal), but it was found that literate people sometimes came to classes and passed tests.

³⁷. Abadzi 2003b.

³⁸. Jones 1997.

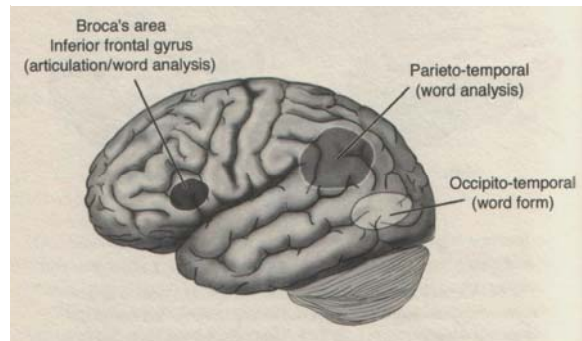
³⁹. The figure includes certain vocational programs for unschooled adults (Oxenham 2004). No study was found that compared the costs of various programs with literacy outcomes, possibly because the costing methods are not directly comparable.

Little-Known Cognitive Factors Determine Literacy Acquisition and Retention

Donors and governments know a lot about costs and management, but know much less about how to teach adult illiterates and what literacy is all about. NGOs may also not know enough. A recent body of research in cognitive neuroscience highlights the fact that reading has large neurological issues, that must be dealt with. Even the definition of literacy is affected.

Certain features of human memory decisively affect reading performance. Brain imaging studies show three regions activated in the brain during reading: two slower analytical neural pathways that are used by beginning readers, and an “express” instant word recognition pathway used by skilled readers. Cognitive research suggests that literacy skills become permanent when the express pathway is activated and people read fast and effortlessly.⁴⁰ Fast reading is needed because our short-term memory is exceedingly brief; to understand written messages, a person must read on average a sentence of about 7 words in about 12 seconds. The slower analytical pathways used by novice readers challenge the limits of short-term memory. The buffer is filled with individual letters, and it overflows; thus people may forget by the end of a sentence what they read in the beginning. Novice readers must make conscious decisions about letters, can only read small amounts of text and may have to read a message repeatedly to understand its meaning. Accomplished readers are usually unaware of this difficulty.

Figure 1: Brain areas involved in reading



Source: Shaywitz 2003, p. 78-82.

The necessity to read within the limits of working memory determines who is a functional literate in real life and points towards a *minimum standard for literacy acquisition*: a minimum of a word in about 1-1.5 second with about 95 percent accuracy. At this rate, readers decipher many script features automatically though they still struggle with comprehension.⁴¹ When the rapid recognition pathway is activated sufficiently, skills become permanent. *Automatic readers do not normally lapse back into illiteracy.* Skills that are not automatized tend to be forgotten rapidly after training, so people who read too slowly are at risk of relapse into illiteracy.

Few neoliterates attain this performance level. For example, cognitive research in Burkina Faso found that new literates took 2.2 seconds to read a word and were correct only 80-87 percent of the time.⁴² **The instant word recognition pathway may not be activated in adults as easily as it is in children.** This means that adults may have to use mainly the slower pathways, reading letter by letter, putting all their attention in the script, and losing the message. Only small amounts of text can be processed in that way. Furthermore, the effort may seem unpleasant to many and adults may avoid it after a while, thus risking a relapse into illiteracy.

⁴⁰ Shaywitz 2003

⁴¹ This feature implies that textbook content does not matter as much as the amount of reading practice, because learners initially have limited comprehension.

⁴² Abadzi 2003c

The various neuropsychological and cognitive obstacles of illiterates may be exacerbated by the burdens of poverty. Overworked people may become discouraged by the limited progress and give up.

Research points towards *a minimum standard for literacy acquisition: By the end of a literacy course, learners should read a word in about 1-1.5 second with about 95 percent accuracy.* Adult literacy instruction should focus on increasing speed and accuracy, objectives that are usually not central in literacy courses. Literacy tests should be timed.

Skill Level Depends on Class Time Use

Because basic reading seems easy to teach, literacy instruction is often a task for poorly paid persons with limited education or training. Teachers teach as it best makes sense to them. The most frequent method is for a person to read a few words and others to follow or for everyone else to repeat aloud. Empirical observations show (Royer et al. 2004) that learners may not necessarily read. They may repeat verbally while looking elsewhere or be lost in the book. Thus, their opportunity to read is much diminished.

The other more egregious problem is teacher absenteeism, which may be made worse by deficient supervision and low or nonexistent salaries. (In Senegal, communities appointed assistant teachers to cover in case of absenteeism.) High teacher attendance and much engaged time in class are needed to provide the practice required to reach the minimum speed and accuracy rates. If teachers are absent often, participants may also have spotty attendance and thus learn very little. If a substantial number of new literates become unable to read a few months after training, financing literacy with the current methods may lead to wastage.

Wastage and limited skills acquisition have spurred lending for post-literacy, but few adults can take the time needed for continuing education. Clearly the priority is to improve the efficiency of literacy classes before financing post-literacy.

II. Policy and Strategy Options for Governments and Major Actors in EFA

Actions need to be taken with respect to reinforcing literacy in the world, both for adults and for children.⁴³ But the donor community and governments have not been clear about the underlying issues. There are important tradeoffs between costs and efficiency, given the complexities of multiple partnerships, the low achievement of primary schools, politicized agencies, and the willingness to focus on instructional details and cognitive challenges. A vicious circle is often created, whereby cheap but ineffective programs disappoint financiers and preclude more expenditure that might make them more efficient. Thus far, the implicit choice is low-cost and low-efficiency programs. These will not get the world to a 50 percent literacy reduction by 2015.

⁴³ The UNESCO-supported International Conference on Adult Education V (CONFINTEA) suggests (a) to integrate adult education and learning more systematically into the education plans and agendas of governments at the local, national, regional and global levels as well as into the programs, conferences and summits of UN agencies and so take advantage of its synergetic potential; (b) to support the national capacity of Member States as well as non-governmental and civil-society organizations and partner agencies in training adult educators, in establishing indicators for continuous monitoring of the United Nations Literacy Decade by 2004 and in systematically assessing literacy levels in different countries and contexts; and (c) to reinforce the UNESCO Institute for Education. CONFINTEA V called for an increase of funding for adult learning to 6 percent of the Member States' gross national product.

Highest priority: Apply Methods that Make and Keep Adults Literate

Instruction must be **reconfigured to increase speed and accuracy** and thus put pertinent cognitive research to practice. Also to undertake specific research regarding the applicability of methods developed for dyslexic children in OECD countries with adult illiterates. (See more later about research). If some programs are shown to be effective in making and keeping the learners literate, governments may be more willing to invest in higher-cost, higher efficiency programs.

An added challenge is that few adult educators know the relevant issues and techniques. This is material that NGOs also do not know, and they cannot be left up to their own devices to figure it out. Clearly there is a need for vulgarization and greater dissemination of the issues that affect literacy acquisition.

Along with more science-based methods, **instructional time** must increase. **Learners must be engaged reading full time** during class. This implies more sophisticated approaches, such as pairs reading to each other with the teacher monitoring. But it also implies teacher attendance and touches on the issues of recruitment, pay, and supervision. To encourage teachers to have more complex instruction, salaries should be commensurate. Costs might be reduced by initially hiring on a minimal basis and retaining those who are most motivated.

As discussed earlier, teachers may be much more accountable to communities, and thus could be recruited locally. But reliable training must come from a central source if methods are to improve. Thus, the public-private partnership needs to have clear links down to the classroom. NGOs and private providers should not teach as they see fit. Governments need to direct how instruction should take place and disseminate useful principles.

Adults may learn effortless reading more efficiently through audiovisual presentations that involve computers. In some countries these can be feasibly available, as in India, Brazil, or South Africa. At the same time, new technologies now available to the masses can create exciting programs with basic adult literacy content. For example, educational TV could carry basic literacy material that enables people to read faster, such as subtitled songs.⁴⁴

These methods (e.g. teaching phonological awareness and increasingly faster reading) are more complex and will probably require larger expenditures for teacher training and materials, such as flash cards or computers where possible. However, the benefits may be worth the costs in the long term. Though per-participant costs are likely to rise, per-graduate costs may remain the same or even drop as program efficiency rises. Perhaps implementing agencies can make the transition to more effective literacy programs.

Universal Primary Education Exclusively or a More Balanced Approach?

Emergency education – making children literate before they drop out. As more poorer students enroll to achieve EFA, the ‘quantity-quality tradeoff’ may become more prevalent, and the dropouts may continue to need basic literacy. On one hand one sees the need for a more balanced approach rather than exclusive attention to primary education. On the other, the dropouts and illiterate graduates are a problem of the inefficient school system. Even with the best of efforts, it is hard to capture illiterates once they have become adults and have acquired their own lives and priorities. The danger of previously schooled cohorts remaining the

⁴⁴ D’Ydervale et al. 1991.

vicious cycle of poverty and illiteracy calls for much greater emphasis on improving educational outcomes in the early grades. **To prevent the next generation of adult literacy participants, primary classroom instruction must use time more effectively and focus on methods to teach fluent reading early on.**

Children who do not have reading disabilities can learn to read fluently during the first grade, particularly in languages with simple spelling. In countries where the dropout rate is high, priority should be given to making students fluent readers in grade 1-2. Since automatic readers do not lapse back into illiteracy, children who drop out able to read fluently, should improve comprehension and skills as they go to work.⁴⁵ This means that teachers in high-risk countries or areas should be trained to devote all possible time to reading and math (to create automatic calculations) and leave less important issues for later. This strategy would be to contemporary educational theories and practices, but automaticity is what is most difficult to achieve later rather than native language development.

Furthermore, initial reading should take place in local languages, whose orthography is usually simple. Children should certainly learn the official language (e.g. English or French) but not as the basis for learning basic information in grade 1-2. The donor community should pay the additional costs involved in mother-tongue instruction. To avoid political and social issues that have often militated against this educational option, local languages should be promoted merely as a basis for learning to read faster and to speak the official language better.

Access and Participation – Stay the Course

Adults have times in their lives when they may be more interested in literacy or other basic education. Several programs have shown that it is possible to bring them out, and indeed the majority are women and rural populations. Community-based partnerships should be extended to enable existing groups of people to learn together. Well organized, less politicized government agencies seem most capable of bringing this about. As mentioned earlier, the courses need to be capable of teaching people to read fluently. Efforts such as Total Literacy Campaigns need a second chance with more effective instructional methods.

To encourage adults with small children to participate, **family literacy programs** may be of help, which may teach parents willing to become involved in school. Since adults may be able to cover the instructional material of multiple primary-school grades once they learn basic reading, **primary school equivalence should be offered.**

Reaching adolescents is a challenge. Many programs are available for out-of-school adolescents, and often attendance is sparse. This is a prime time for many young people, when livelihood and family needs become prioritarian. [CITE BF] Multiyear programs often have relatively few students.

Thus far, literacy is often given as a one-size fits all. It is possible to target sub-populations, when there are sufficient numbers of people available.

⁴⁵ It is unknown, however, how sustainable automaticity is in ages 7-8; children at these ages may forget languages, but visual automaticity may or may not be related to this issue. Egyptian children who dropped out literate in grade 4 were found to have improved their skills, while those who were illiterate forgot what they knew (Hartley and Swanson 1986)

Reaching semi-literate dropouts. Most of donor-financed literacy courses tend to be one-size-fits-all and teach the elements of literacy. However, a substantial clientele may be dropouts, as in Uganda and Tanzania. Programs should cater more to individual needs through pretests and classes for more advanced people or for the improvement of reading comprehension are rare. Evaluations suggest that this group of people may be capable of acquiring a relatively high level of skills and maintain them. [e.g. 4th grade] This may be because they learned to recognize fast many letters in school, and extra practice

Unschooling participants. The primary concern of this population is to acquire reading fluency and maintain it. Because they have never been to school, they have little experience with ‘metacognitive’ functions, i.e. how they learn, what they must do to retain material. Though statistics often do not distinguish between unschooled and semi-literate learners, these populations are probably at the greatest risk of lapsing back into illiteracy.

Implications for future lending instruments. The donor community has been shifting to programmatic lending, whereby multiple sectors will receive budgetary support, and donors will mainly focus on high-level coordination. There may not be many more self-standing literacy projects. Given the unsatisfactory performance of literacy components in larger projects of various sectors, there is a concern that the performance of literacy lending may deteriorate rather than improve. There are increasingly fewer staff resources available to pay attention to the important detail-level instructional issues brought forth in this document. Staff with appropriate knowledge is needed to give sustained attention to project supervision, and using ever-changing consultants may not provide needed continuity. Given the changing lending circumstances, an important issue requiring high-level decision is not only how to make literacy classes more effective, but also how to ensure knowledgeable and effective supervision and interface with effective borrower institutions. Linking formal and nonformal education delivery modes in country strategies may succeed in giving adult literacy higher priority.

The cognitive skills needed for better decisionmaking and empowerment could be imparted in literacy classes through modules that exercise short-term memory, spatial perceptions, and verbal skills. More research and adaptation is needed for these as well as for the techniques necessary to bring about fluent and effortless reading within the timeframe of literacy courses.

Researching Literacy Acquisition to Improve Effectiveness

Clearly, applied research is needed to determine which methods are more effective and how the costs and benefits compare. Some are of higher priority than others. Here is a potential agenda.

To investigate the problems of neoliterates, academic expertise is needed in perception, cognition, and neuropsychology. NGOs that teach literacy usually do not have this expertise. Grants could be given to universities in developing countries for literacy research. Because these rather specialized domains of knowledge are rare in the developing world, research must be carried out through twinning arrangements with expert academics of industrialized countries.

The various scripts and the languages that use them have specific decoding and perceptual issues. Literacy “laboratories” in ongoing classes could be set up in four or five countries that deal with specific language and script combinations: India for the use of syllabic scripts, an African country using the Latin script, a country for the Arabic language, and a country using the Arabic script in Indo-European languages (such as Pakistan, Iran, Afghanistan). Countries that are

developing institutional strength and expertise, such as Burkina Faso, could be preferred. Researchers should have access to computerized equipment for measuring various aspects of reading performance and cognition of illiterates, such as tachistometers for the study of eye saccades, and brain scanning equipment to explore brain changes as learning occurs (for example, an fMRI at the All India Medical Sciences Center in Delhi). Research would be carried out in literacy classes run by governments or NGOs, but for certain pilots, learners might be paid small sums to participate. Issues to study could include:

- The minimum level of speed and accuracy that is functional and sustainable; how people with marginal skills use written materials, and how they may compensate for low speed (for example, by reading aloud).
- Amount of reading exposure needed to automatize various letter patterns that occur in specific scripts, which patterns learners find particularly easy or difficult; what conditions facilitate progress from a serial to a parallel processing mode? Under what conditions are sounds permanently connected to letter patterns and unlikely to be forgotten?
- Comparison of adult performance with that of child learners, given similar circumstances and amount of exposure; identification of aspects in which adults and children differ in perceptual learning and acquisition of automaticity; application of the findings to improve programs for both age ranges.
- Effective audiovisual and cognitive methods to train teachers for innovative literacy instruction.
- Relapse into illiteracy: relationship with instructional duration, effectiveness, and prior schooling; characteristics of those most likely to relapse, exactly what reading features are forgotten, techniques to minimize it (for example, the utility of mnemonics) or access the lost memories.
- Powerful simulation models have been developed to determine the likely reading outcomes of readers who have various limitations and follow various strategies.⁴⁶ Such models could be carried out with data collected from literacy course participants to predict likely achievement levels and suggest changes in instructional strategy.

Research focused on poverty alleviation might include questions such as:

- How do illiterates use data and development messages, such as IEC (information, education, communication)? How do literacy participation and amount of formal schooling change data use? To what extent is the ability to understand media (radio, TV) messages affected by literacy level?
- What forms of interventions can improve the areas of lower cognitive performance of adult illiterates and relate learning to cognitive measures such as processing speed, inhibitory functioning, and working memory capacity? The efficacy of simple

⁴⁶. Rayner et al. 2001.

remedies such as the effects of chewing gum on the working memory could be explored for utility.

- Does an improvement in the cognitive processes of neoliterates lead to more effective decisionmaking regarding life choices that lead to poverty alleviation?
- How does empowerment relate to the degree of literacy learners acquire? What conditions maximize the empowerment attributable to literacy classes?

For children's literacy, it must be researched whether it is possible to lose reading automaticity after acquisition up to a certain age (e.g. 8), just as children who become fluent in a language and forget it.

A research program of 3–5 years would provide considerable understanding on these issues.

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