Online Outreach Paper 5

Costing early childhood care and development programmes

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This paper was prepared for the Bernard van Leer Foundation and the Consultative Group on Early Childhood Care and Development.

Cover:
A young girl in a pre-school in Guatemala City, Guatemala, in a project by the Fundación Esfuerzo y Prosperidad (FUNDAESPRO). Photo: Jon Spaull

Citation:
Myers, Robert G. (2008). Costing early childhood care and development programmes. Online Outreach Paper 5. The Hague, The Netherlands: Bernard van Leer Foundation.

Editing, design, layout and proofreading: Green Ink (www.greenink.co.uk)

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Executive Summary

Pre-schooling and other early childhood development programmes are known to give children a head start in life and to give parents more time for income-earning and other activities. This paper reviews how the costs of these important programmes can be estimated at programme and individual centre levels.

Such estimates can be very useful for informing the design of new programmes and for reorientating ongoing programmes. They have great potential to identify inequalities in provision where disadvantaged children may not be benefiting due to the extra costs involved in reaching them and because parents cannot afford to contribute to programme costs.

The paper explains three ways of making these estimates. Traditionally, most cost estimates have been based on figures in official budgets and expenditure records. A case study from Bolivia shows how these kinds of estimates often fail to provide accurate and complete costings. They usually fail to include costs that are not included in governments' or programmes' education budgets, such as the funds from health budgets and the contributions in cash, kind and time from local communities and parents. They also often fail to write down the costs of new buildings and capital equipment over their useful life and instead allocate these costs to the year of expenditure.

The paper recommends two other approaches for more accurately estimating costs. The first involves doing field studies to try and capture actual total costs. The example presented from Chile estimates the costs of community participants by giving them a shadow price to reflect the cost of their time. Durable equipment was valued at its market price spread over its estimated useful life while the initial training of personnel was also treated as an investment spread out over the programme period.

The second alternative is to simulate the costs of a programme in a model, based on a range of assumptions about programme components and their costs. A case study from Jamaica shows how this allows for a range of variables to be plotted and adjusted to cover different scenarios such as the number of teachers, the characteristics of the area of implementation and the extent of volunteer contributions.

Overall, the review identifies large variations in the cost of early childhood care and development (ECCD) programmes with estimates ranging from US$2 per child per year in a parental education programme in Mexico to US$7,881 per year in a pre-school programme in the USA. However, costing is complicated and results are usually approximate and seldom allow the direct comparison of costs between different programmes.

Other major conclusions are that:

- So-called free-of-cost programmes are often quite costly for resource-poor parents. This is not to say that such contributions are unwarranted, rather that they must be accounted for and recognised.
- There is often inadequate expenditure on supervision and monitoring and on reinvigorating ongoing programmes.

The author ends by making a plea to funding agencies to go out from their central level budget calculations and their comfortable offices to see programmes in action and to build cost estimates from how expenditure actually occurs and who contributes.

Acknowledgements

This paper draws heavily on work by other authors who have set out methods for estimating costs and who have looked at a set of particular cost analyses to try and systematise the results. I am especially indebted to Levin and McEwan's oft-quoted work *Cost-Effectiveness Analysis* (2001) and would recommend it to readers who want more concrete guidance on methodological matters.[1]

What is different in this review is its emphasis on determining costs at the level of individual childcare centres (or operational units), not only for planning purposes, but also as a means of looking at possible inequities in the distribution of resources across centres and programmes and at differences in who bears the costs.

I am grateful to the following authors who provided inspiration for the current paper:

- María Isabel Lira´s review (1994) of cost studies in Latin America that emphasised the costing of non-formal programmes
- Alejandro Márquez's (2007) review of cost studies, mostly from Latin America
- Henry Levin and Heather Schwartz's (2006) background paper on costs for the 2007 Education for All Global Monitoring Report.

The paper could not have been written without contributions from the following individuals.
I thank:

- Emily Vargas-Barón for sending references and overseeing the project
- Sian Williams for sharing the costing model for the Jamaican case (Williams, Morrison and Watson-Campbell 2004)
- Nisme Pineda and Alejandro Acosta for sharing their Colombian study (Pineda 2006 and Acosta 1994)
- Kathy Bartlett who passed on work supported by the Aga Khan Foundation in Kenya (Issa 2006)
- Cecilia Breinbauer at the Inter-American Development Bank who shared her recent costing studies from Chile, Nicaragua and Honduras (IADB 2006).

[1] Other notable presentations of costing methods include Berg (1987), Jarousse et al. (1996), and IADB (1999). As well as Levin and McEwan (2001) I would recommend Save the Children USA (2005) for providing clear and practical project costing guidelines.

Introduction

The paper explores, in the light of previous studies and reviews, how the costs of early childhood care and development (ECCD) programmes can be estimated. The focus here is on costs at programme and individual centre levels and not on national-level costs. Accordingly, little attention is given to the huge challenge of estimating the outcomes of programmes.[2]

Putting together these costings involves 'estimating' rather than 'calculating' or 'measuring' or 'determining' costs, as a variety of assumptions and choices need to be made to value resources and arrive at the costs. This makes it problematical to compare the costs of different programmes directly. One of the main conclusions of this paper is that the process of costing is complicated, results are approximate, and the direct comparison of costs between programmes is seldom possible.

This paper explores the rationale for estimating programmes costs, explains some ways of defining and estimating costs, and gives several examples.

In what is a very wide-ranging subject, this paper mainly looks at:

- Costs estimated from the ground up and as related to particular programmes (as opposed to inferring general costs from national budgets and/or expenditure)
- Cost studies of centre-based or home-based educational programmes for pre-primary children, with only a little attention given to integrated programmes involving health and nutrition
- Cases from Latin America, in line with the author's field experience.

[2] This paper is part of a series of papers commissioned by the Consultative Group on Early Childhood Development on the subject of costs and early childhood development. The second paper: "Early Childhood Finance: An Exploration of Investment Opportunities and Challenges" by Emily Vargas-Barón, is to be published by the Rise Institute.

1. Why estimate programme costs?

Three of the main reasons for estimating the costs of ECCD programmes are for programme budgeting and planning, programme monitoring and accountability, and for comparing costs and benefits.

1. Programme budgeting and planning. The main motivation behind most costing exercises is to inform programme budgeting and planning. Those who provide resources need to know a programme's budget needs while planners need an idea of costs so that they can tailor programmes to fit within budget levels and other constraints. Cost estimates can answer the following questions:

- What do different strategies and models cost to start up and implement?
- Within the limitations of available budgets, what technologies, methods, and activities can be funded towards meeting a programme's goals?
- What would the costs be to extend programme coverage or improve its quality?
- What would it cost to add a component to an ongoing programme?

In the last analysis planning and budgeting decisions are often made in response to users' demand and the force of their advocacy strategies, on the sources of financing available, and on politics and other factors. Nevertheless cost considerations are often an important part of decision making. A crucial point is that all costs should be identified and not just those to be covered by the institution making the budget or doing the planning.

2. Programme monitoring and accountability. Ongoing programmes often need to be adjusted as some goals are met, weaknesses become evident, new conditions and constraints arise and programmes grow. Costing exercises are needed to see how accurate projected costs and budgets were and to help determine the costs of changes, using as a starting point the actual costs incurred, but keeping in mind that as programmes grow costs per child may change. Estimating the costs is also important towards showing the general public where programme money is being spent.

The questions to answer here include:

- Are real costs the same as budgeted costs?
- In which programme categories and activities are resources concentrated?
- Are funds being spent for the designated purposes?
- Do adjustments need to be made in programme technologies, methods or activities, or in the populations served, or the duration of programmes in order to meet programme goals within budget limitations?
- How do costs vary with conditions and change over time?
- How do costs vary at local levels within the same programme model and/or across programme models?
- Are there equity and quality problems related to costs?

The last two questions move beyond simple financial accounting to questions of how programmes support public goals of equity and quality in the upbringing of young children. To do this requires looking at costs at the level of centres or districts serving specific populations. Such disaggregation helps identify variations in expenditure that may indicate inequalities linked to particular geographic circumstances or to social or cultural differences and discrimination. Inequity may be evident in differences in the relative amount of resources different groups actually receive. It may also result from the way in which different groups are asked to participate, For example, a disadvantaged rural population may be asked to contribute more in money, time

and kind to financing programmes than more privileged urban participants. Here the first step is to estimate costs and the second is to see how the burden of costs is distributed.

3. Relating costs to outcomes or benefits. Estimating costs provides the base information for carrying out cost-benefit analyses. This is a more difficult exercise than calculating costs as the necessary information is often not available and the results often depend on making rather questionable assumptions. It is usually a challenging undertaking to define and then assign a monetary value to the effects and benefits of a programme or a particular input. This study does not cover this reason for estimating costs. More information on measuring the benefits of programmes can be found in evaluations of the Abecederian project (Masse and Barnett 2002) and the High/Scope Perry Preschool Project (Schweinhart et al. (2007).

2. How are costs defined and estimated?

Defining costs

This paper defines the costs of a programme as the total costs of all aspects of a programme regardless of who bears the costs. This approach is needed to be able to answer questions about inequities in how resources are made available or whether investments made in particular programmes are economically sound. A narrower view could lead to unfortunate decisions, such as expanding a successful programme by increasing the government's budget when the needed complementary resources from other contributors may not be present during expansion as they were in the preceding successful programme.

This paper follows Levin and McEwan's (2001) approach to valuing resources in terms of whether or not they could be used for other valued alternatives.

> *"For example, a programme for raising student achievement will require personnel, facilities and materials that can be applied to other educational and non-educational endeavours. If these resources are used in one way, they cannot be used in some other way that may also produce useful outcomes. … Technically, then, the cost of a specific intervention will be defined as the value of all the resources that it utilises had they been assigned to their most valuable alternative use." (p. 44)*

But how to value the resources used in a programme? The most common way is to assign a value in terms of the price of something as it is bought and sold in the market. For instance, pencils, cleaning materials and food can usually be easily valued because their price is usually set in a competitive market and the best alternative use of the resources is essentially the same as their use in a particular early childhood programme. However, some programme resources are usually not bought and sold in a competitive market. For instance, textbooks produced by the government are often provided free of charge. The cost to the government of these books may be either above or below the market price for similar books. Or, a building not being used for other purposes may be loaned or donated by a community as a programme centre. Again there is no competitive price. In these cases it is necessary to estimate the cost as if books were being bought in a bookstore or as if a similar space was being rented. Such estimates provide a shadow price of the resource.

Personnel are paid a salary and benefits, which usually represent their market value and thus their actual cost to a programme. However, although unpaid volunteers may be an important programme resource, their services often have no price attached and do not therefore appear in budgets or expenditure accounting. Similarly, it is common in community-based programmes to only pay a low salary to local personnel on the assumption that

they are donating part of their time. These payments often underestimate their contributions and so, again, a shadow price is needed.

So all of the resources used in a programme should be carefully and clearly defined regardless of who provides them. Once that has been done, either a market price can be assigned or – when market prices are not available or are distorted – a value should be assigned based on their shadow price.

Another example of the need to adjust costs is that of a building that has been constructed or purchased to house programme activities. The building will presumably have a long life so the cost should be spread over its estimated life (e.g., 30 years). At the same time, the money used to purchase or build could have been used in an alternative way; it might, for instance, have been invested to earn a certain return. Choosing to build a centre foregoes the interest that could have been earned, thus constituting a cost.

Programme components

A crucial step in any costing exercise is therefore to identify and categorise the main types of resources used by programmes. Despite major variations in programmes, certain categories of resources are common. The following 11 categories cover the main costs for most early childhood development programmes.

1. Personnel costs. Personnel includes:

- Service personnel who attend directly to children including teachers, doctors, assistants, and nurses
- Administrative personnel at local, district and national levels who look after organisational matters
- Supervisory personnel who provide technical oversight that may include on-the-job training
- Support personnel such as supervisors, cooks, caretakers and drivers.

It is important to estimate these costs accurately as they often make up a large proportion of programme costs.

Costs of paid personnel and volunteers. Cost estimates for paid personnel are normally the actual expenditure on salaries and benefits, costs that are usually set by the market. Estimates need to be made of the value of unpaid volunteers' contributions. Where their work is not particularly demanding, the minimum salary or the lowest salary of a paid para-professional is often used. On occasion, paid personnel, particularly in community-based programmes, are paid less than the minimum salary assuming that they are volunteering part of their labour. Here a shadow price is needed to represent the extra costs. Where, for example, a minimally qualified community caregiver is paid half the minimum salary but does the work of a more highly qualified caregiver, the caregiver should be valued at the level of the minimum wage. When determining who bears the cost, the paid half should be assigned to the institution that pays the caregiver and the shadow price half to the caregiver as a member of the local community.

Costing at the level of individual centres versus at the programme level. If the estimate is being made for an individual centre within a larger programme (perhaps in order to see how costs vary from centre to centre), then the cost of a supervisor attending to that centre will need to be prorated by charging only that portion of time they dedicate to that centre. Similarly, if special teachers, such as music or physical education teachers, service more than one centre, their value should also be prorated. The cost of health personnel in an education programme, or of educational personnel in a health programme, will depend on whether or not they are part of the regular staff of a centre/location. If not, only the portion of time they devote to a particular centre should be included. When these costs are determined at the programme level they are represented by the sum of

salaries and benefits of all supervisors and special personnel employed. The same treatment is appropriate for administrative personnel who work in a programme's district or head office.

2. Infrastructure. The cost of infrastructure (buildings, facilities and equipment) should be valued differently according to whether they are owned by the programme, making them part of the organisation's capital, or whether they are rented or donated. If they are owned then the value needs to be prorated over the estimated life of the resource, taking into account its best possible alternative uses, or estimated by using what it would cost to rent or lease something similar (see Chapter 4 of Levin and McEwan 2001). Where facilities or equipment are donated it is probably best to value them at what it would cost to rent them.

3. Materials. Some materials such as toys and books and teacher aids will be used over a period of several years such that their cost should be spread over the period of their usefulness. When estimating the cost of materials actually available or used it should be kept in mind that the cost may be different from the amount budgeted by a centre or programme. The difference may be related to resources purchased or donated by teachers or parents with such costs usually being hidden as they never appear in budgets or accounting statements.

4. Supplies. Supplies are items used up during a programme and are usually valued at their market price. These estimates should include the estimated cost of donated items.

5. Food. Many early childhood programmes in the Majority World (developing countries) are built around a feeding programme or include a feeding component. Food is often, therefore, a major cost. The food should be valued at its market price even when it is donated through a governmental feeding programme or by an external agency such as the World Food Programme. In some cases, parents are asked to provide food or contribute to a fund for purchasing food. This food constitutes an extra cost to families as it is usually additional to that normally supplied at home and so should be classified as a programme cost borne by parents.

6. Overhead expenses. Overheads include such items as utilities, cleaning, maintenance and insurance. Where a programme shares facilities with another programme, or if a centre (school, health centre, etc.) has multiple uses, then the overhead expenses will need to be prorated according to a criterion such as the percentage of space devoted to the programme or the amount of time the programme uses the facility. If the cost evaluation is being carried out at the level of individual centres, an appropriate portion of the overhead expenses from district or national headquarters would, in theory, need to be added to local costs; although this amount would usually be very small.

7. Transportation. In some cases children need to be transported to a centre. These costs may be covered by the programme or paid for by parents. This category may also include transporting administrators and other personnel to meetings and training courses. Some of these costs may be paid for by personnel, because they are not budgeted for or are under-budgeted. Supervisors, for example, may have to pay part of their transportation costs to get to their schools, thereby providing a subsidy to the programme.

8. Uniforms or special clothing may be needed by children in early education programmes, with these costs being commonly borne by parents.

9. Training costs. Initial training programmes will produce a resource that may well realise its value to the programme over many years and so its cost should be spread over the years that the trainee is expected to be in the programme. This creates a problem when budget figures are used to determine costs, because budgets

must include funding up front for the training and so this lump sum overestimates the training costs for a particular year. However, in a few programmes, the turnover of personnel is so high that training becomes an almost continuous expense and so should be treated as an annual cost.

This is the case in some non-formal programmes. An extreme case is pre-schools in Mexico, where secondary school graduates are recruited anew each year to teach in rural areas. They are provided with two months of initial training and so training is a recurrent expense.

The cost of on-the-job training needs to be taken into account and may need to be prorated over several years depending on the continuity of personnel. Budgeted training costs often underestimate the real costs as they may not include participants' time in addition to their normal duties, or costs that participants bear themselves such as for transport and food.

10. Developmental costs. Developmental costs should either be treated as initial costs or else spread over a programme's life as new approaches are tried out later. These costs, such as preparing new materials and experimenting with new approaches, are usually borne at the programme level.

11. Evaluation costs. The costs of external evaluations need to be estimated. Where they occur yearly they should be treated as a recurrent cost, otherwise the cost should be spread out proportionately.

The above breakdown into 11 types of costs shows that:

- The method of valuing a component depends on the way in which it is operationalised in each setting (is a classroom rented, donated or owned? Are teachers paid or do they volunteer?)
- Some costs may not appear in programme budgets or expenditure statements
- Capital costs should be spread the useful life of whatever is purchased
- Costs may appear at the centre level or at the more general programme level so costs at both levels need to be taken into account.

Ways of estimating programme costs

Programme costs can be estimated from official budgets and expenditure records, from the resources actually used and by putting together cost simulation models.

Budgets and expenditure records

Budgets are the most frequent source of information for estimating programme costs. This is because looking at records, usually in some central place, is much easier than collecting information from the field about the actual costs. Unfortunately, budgets, even where they are specific to a particular programme and are not embedded in a larger budget appropriation[3], do not provide a very good starting point for estimating programme costs. Why?

First, a programme budget seldom includes resources provided by organisations and individuals who are not directly responsible for the programme but nevertheless help to develop, operate and evaluate it. If others provide resources then the costing exercise must involve putting together values found in more than one

[3] In some countries, for instance, early education programmes are embedded in a basic education budget category that includes primary schooling, making it difficult to sort out the early education appropriations.

budget, something that is often difficult to do. If the budget is drawn up by the central government it will, in all likelihood, not include support provided by the local municipality or the private sector. Moreover, it will not include money raised by schools or health posts or donated time and materials. If only the educational budget is used to cost an early education programme, then costs for promoting child health may not be included as they may come from a health budget.

Second, budget figures will often distort costs because they just register what is spent in a particular year, even though the cost of items such as new buildings should be spread out over many years. Construction and training and furniture must be paid for in the present even though their use and benefits play out over many years.

Third, budgets are 'best-guesses' that may bear little relation to actual expenditure. It is not unusual, for example, for a budget to include a category for the purchase of equipment that never gets bought because funds are instead spent on something else.

Do expenditure records provide a better basis for costing estimates? **Expenditure records** show how the money is actually spent. In most cases individual operating units (pre-schools, childcare centres, home visiting programmes, etc.) keep accounts. However, these accounts usually only show the funds received from the core funding agency – often a government agency – and in the same way as for budgets they do not account for resources received in other ways including locally-obtained funds, donations of time and in-kind contributions. They will also show capital expenditure costs in only the current year's expenditure figures when their value, and hence their costs, should be spread over a number of years. Finally, it can be difficult to access these records and their reliability is sometimes questionable.

Actual programme costs

Estimating costs from actual programme costs may be more complicated and expensive, but it allows all programme costs to be identified and evaluated including those hidden in various budgets and costs associated with volunteer work and donated resources. It also permits a variety of analyses of cost information that are not easily done using budget information.

To apply this method at the programme level involves visiting a sample of places where the programme is being implemented and identifying costs from questionnaires, conversations with practitioners and participants, observations, and by examining account records. Just sending out questionnaires to centres is unlikely to produce reliable results. Field surveying allows a look inside a programme, identifying variations in costs from place to place and their relation to particular conditions. Doing this helps to assess equity and quality as well as projecting costs for budget purposes by allowing comparisons between different settings in the same programme.

This method of calculating costs has been used infrequently. However, its utility is reflected in the example from Chile in the Section 4 of this paper. This strategy has also been used to estimate programme costs in Colombia (Pineda 2006), Brazil (Ciavetta Franco 1983), Peru (Cereceda 1984), and Mexico and India (Myers 1990 and 1995).

Cost simulation models

Another approach to estimating programme costs is to build a simulation model. This can be done manually or on a computer spreadsheet based on a set of assumptions about the resources needed and their costs. These assumptions should be based on research and experience and prevailing norms concerning the resources needed by a programme to produce the desired results. The Jamaican example in the next section shows how

this model can be built around the resources needed to achieve the minimum acceptable results. This approach can be particularly useful when designing a new programme to compare the different options for running it. The main challenge is to account for the great variation that may occur over a programme's area of implementation. For example, it may be more difficult and costly to get supplies to some areas; there may be fewer qualified personnel in certain areas so that incentives are required; and food may be needed in some cases and not in others. These variations complicate a modelling exercise but can often be accommodated.

Ways of organising and analysing costs

This paper identifies the following nine ways of organising and analysing programme cost information. Any costing study should be clear from the start about which types of information it needs to gather.

1. Sources of financing. It is often important to know who is bearing the cost of a programme and in what proportion. If by an international organisation then how costs will be covered once support ends needs to be worked out. It is also important to credit all contributors, including parents and communities, who contribute financially or in-kind. Seeing who bears the costs is very relevant to questions of equity. Where significant costs are borne by parents it needs to be considered if some are being asked to contribute beyond their means.

2. Investment (capital) and recurrent (operational) costs. It is often useful to separate out capital and operational costs as capital costs need to be spread over time to account for the tying up of funds in capital resources. It is also useful for the programmatic reason that to continue to be a viable and dynamic programme funds need to be reserved for new investments. Buildings and equipment wear out, and continuous training is important to keep teachers' knowledge up-to-date.

3. Direct versus indirect/overhead costs. Recurrent costs include direct and indirect costs. Direct costs are the salaries (or time) of those who attend directly to children, the materials they use, the food consumed and the cost of its preparation. Indirect costs include utilities and office supplies and administrators' time.

4. Fixed or variable costs. A building is a fixed cost whose cost does not change if some additional children are brought into a programme, whereas educational materials and supplies are variable costs dependant on the number of children. This distinction is helpful for making projections.

5. By programme setting. When costs are constructed in a sample of settings it is possible to compare, for instance, the differing costs of rural and urban settings. This allows more sophisticated projections and may uncover inequities in who benefits and bears costs.

6. By lines of action/activities. It is important to see which kind of activities most expenditure goes on. It may be, for example, that a great deal is spent on food with little effect on children's nutritional status. Or, the analysis may help to identify neglected activities such as supervision or on-the-job training when these are crucial for maintaining and improving quality.

7. By project stages. The costs of an experimental pilot project may be very different from the costs during full-fledged implementation. Indeed, the process of piloting programmes can justifiably be treated as a capital cost to be spread out over a programme's life. Also, at the beginning of a programme it is often necessary to budget for activities such as social mobilisation to get people involved. To compare costs in different years the costs need to be adjusted for inflation to a base year – usually taken as the year of the initial cost estimate.

Adjustments are usually made according to consumer price indices that show how the value of money changes from year to year in a particular country.

8. Total or per participant costs during a particular period. A distinction needs to be made between the total costs of a programme and what it costs to provide the service per beneficiary over a period of time. In some cases it is necessary to use daily or hourly estimates of costs and then aggregate them as, within the same programme, the length of time children are attended to often differs significantly. When calculating per-participant costs the number of individuals used may be all of those enrolled in the programme or the reduced number who actually attend or participate regularly. Per-person costs rise if the latter is used.

9. At national, regional, programme or centre levels. Classifying costs at levels below a national or regional level allows comparisons to be made within programmes. This can be important when projecting into the future. Such a classification can also identify important differences in the amount of resources actually used in different settings and in the efficiency and effectiveness of their use.

3. Examples of cost estimates

The following three case studies present some of the strengths and weaknesses of the three ways of estimating programme costs. Other examples are included in Chapter 4.

Estimates from budgets and expenditure records – example from Bolivia

This costing exercise was carried out to evaluate two community-based daycare programmes with one run in centres, the other in homes (Consultoria Asesoria y Servicios Latinas 1998). These programmes began in 1994, and were fused into one national programme in 1998. In 1998 the World Bank, the World Food Programme, the Inter-American Development Bank (IADB), the European Economic Community and the United Nations Chidren's Fund (UNICEF) covered 61 percent of the assigned budget with an estimated 30 percent met by the national government, 7 percent by families and 2 percent by local government.

The study mainly drew on financial expenditure records at national and prefecture levels. It used the budgets for 1996, 1997 and 1998 to estimate unit costs and to examine the changing structure of costs as the two programmes merged. The study's main purpose was to help develop a strategy to sustain the programme beyond international support.

Table 1 shows the results of the costing exercise showing how the costs were distributed in 1997 and 1998. Food was the largest cost, followed by teachers' salaries. The remuneration of the para-professionals (educators) was very low in the programme and it is not clear from the study whether or not a shadow price should have been applied to estimate their 'real' cost. Nor was it clear whether or not benefits were provided to the educators and included in the cost estimate.

The monthly cost per child was estimated at US$38.99[4] in 1997 and US$38.91 in 1998. If it is assumed that centres function for 10 months of the year then the annual cost was about US$389 per child. This seems to be a relatively high cost for a country such as Bolivia that has a low per capita income.

[4] Note: All dollar figures given in this paper are US$s.

Table 1. Estimated costs of the National Program of Attention to Children under the Age of Six (PAN), Bolivia, 1997 and 1998

	Distribution of costs (%)	
Cost categories	**1997**	**1998**
Operational costs		
Purchased food	16.4	17.9
Donated food	16.5	10.6
Utilities and maintenance	8.1	5.7
Health	0.4	0.04
Teachers (home daycare mothers)	13.8	13.6
Equipment	6.7	9.4
Repair and renovation	3.2	2.2
Facilitators	2.4	1.0
Supervision	2.8	4.7
Training	2.9	5.9
Administrative costs		
Regional support personnel	9.1	8.0
Regional operation	1.7	5.6
Other regional	0.1	4.2
National support personnel	7.7	7.2
National operation	8.2	4.0
Totals	**100.0**	**100.0**

The study faced a number of difficulties in getting accurate and indicative expenditure figures from budgets and expenditure records. The authors also pointed out the following:

- The estimation process accounted for the cost of buildings, furniture, training and other such 'capital' costs at the time of expenditure rather than writing them off over their useful life. Doing this would have reduced annual costs.
- Health costs were minimal suggesting that costs in a health budget were not picked up. Doing this would have slightly increased the cost estimates.
- Remuneration for the para-professionals was not assigned a shadow price. Doing this would have increased costs.
- When costing the renovation and repair of homes that served as childcare centres no allowance was made for the fact that this was funded by loans that would be repaid. Including this would not have increased the cost to the programme, but would have changed who covered the cost from the government to homeowners.
- The cost of parental time spent on the programme was not included. Adding this would have increased the cost estimates.

Estimates based on actual costs – example from Chile

A study looked at the costs of the following three forms of care programmes for young disadvantaged children (Bosch and Gonzalez 2006).

- Formal programmes with separate components for 0-to-2- and 3-to-6-year-olds: There were wide variations in the numbers of children in the centres, as well as in the organisation and infrastructure of the centres. Several modalities were costed operated by the National Council of Kindergartens (JUNJI) and the Integra Foundation.
- A non-formal community home daycare initiative for working mothers where one mother cares for between 5 and 8 children: These centres were operated by two local private foundations.
- An inter-sectoral programme providing mothers of children at risk of delayed development with support and education through home visits and in periodic small group meetings. This name of this JUNJI-operated programme roughly translates as 'The Cradle Room in the Doctor´s Office'.

The evaluators recognised the difficulties of accessing disaggregated budget and expenditure information, and the fact that most early education centres are supported with resources from a variety of sources. They therefore gathered cost information by administering a questionnaire at a sample of the formal education centres and by interviewing teachers and other 'implementers' of the home daycare and parental support programmes. This information was verified against institutional records and by observing the programmes in action.

Costs were evaluated either from the actual expenses incurred or by assigning the value of the best alternative use. Values were estimated and assigned both for resources used and investment costs.

Amongst the various costs categories:

- The costs of volunteers and personnel in informal positions were estimated in terms of what it would cost to contract equivalent services. Most volunteers' time was valued at the minimum wage.
- The value of buildings and land where the programme functioned was valued at the cost of renting an equivalent space.
- Durable equipment was valued at its market price spread over its estimated useful life.
- The initial training of personnel was treated as an investment spread over the programme period and on-the-job training was included in the centres' general operating costs.
- Central supervision, technical and administrative support costs were pro-rated according to the number of centres serviced.

As the programmes were ongoing, developmental costs were not considered. Evaluation costs were also not included, nor were possible costs for items such as transportation, uniforms and parental participation.
The researchers estimated the costs separately for 0-to-2-, 2-to-4- and 4-to-6-year-old children in the centres. The administrative costs, infrastructure and other costs that applied to all the age groups were allocated accordingly.

The per-child costs calculated for these varied programmes (See Table 2) were found to vary from US$82 per month (in the community daycare centres and the JUNJI alternative centres) to US$127 per month (in the formal JUNJI programme in which funds are transferred to other organisations to implement), with annual costs ranging from US$984 to US$1,524. The salaries accounted for about half of all costs and food for 25 percent. There were significant variations in costs in the centres by age group with per child costs for the 0-to-2 group being, on average, 80 percent more than for the 2-to-4- and 4-to-6-year-old children, related mainly to the greater adult-to-child ratio for the younger children.

Table 2. Monthly per-child expenditure of three childcare programmes (in Chilean pesos)

Cost categories	JUNJI implemented	Integra implemented	JUNJI implemented by others	JUNJI alternative centres	Community daycare
Personnel (regular hours)	21,482	23,266	26,891	12,563	21,332
Personnel (extra hours)	5,590	5,671	8,943	5,777	
Food	14,031	13,282	14,646	13,166	7,025
Consumable materials	1,940	1,791	2,386	2,151	1,583
Basic services	1,126	1,686	2,223	1,224	363
Furniture	1,826	1,154	2,804	1,219	1,100
Infrastructure	4,307	4,445	4,571	3,875	3,055
Supervision and technical help	4,099	5,078	4,016	2,832	8,413
TOTALS	54,402	56,373	66,479	42,807	42,872
US dollar equivalent	US$104	US$107	US$127	US$82	US$82

Source: Raczynski et al. 2006

Constructing costs by modelling – example from Jamaica

The Caribbean Child Development Centre (CCDC) built a simulation model for the IADB to show the costs and effectiveness of different types of early childhood development interventions in the Caribbean. The example presented here is taken from Jamaica (Williams, Morrison and Watson-Campbell 2004).

The model estimates the costs of delivering childcare and development services for particular service models in particular settings. Inputting estimated figures for the proposed coverage, level of access, quality of service and the supporting environment allow the overall costs of the programme to be calculated.

The costs were arrived at by identifying and specifying:

1. The phases of interventions (both in relation to those targeting parents – during the pre-natal period, from birth to 6 months and 6 months to 8 years old – and those directed at children within the age groups of 6 months to 8 years, 8-to-12 years and 12-to-18 years).
2. For each phase, the minimum content, intensity of exposure of children to the content and support needs for those at risk of being unable to benefit.
3. Within each category, and for each phase/service model, the 'resources' needed to assure minimum quality content, exposure and support.

The model simulated variations for each childcare and development model. For example, a pre-school home visiting service for 3-to-5-year-old children was contrasted with three versions of daycare, each incorporating a pre-school component, but serving families with younger children as well.

The model for costing a home visiting programme for young children is outlined in Table 3. It was built by assuming that a home visitor makes six visits per day meaning that a group of six visitors cover 180 children. The model arrived at an annual cost of US$312 per child after accounting for the need to write off capital costs over several years.

Table 3. Breakdown of per unit costs for home visiting programmes, Jamaica

Particulars	Unit costs (US$)	Annual costs (US$)	Number	US$/child
Number of children			180	
Staff salaries				
Project officer	1,022.28	12,267.36	1	68.15
Home visitor @US$149.67 per month	146.67	10,560.24	6	58.67
Sub-total		**22,827.60**	**7**	**126.82**
Administrative office costs				
Accounting clerk	333.33	3,999.96	1	22.22
Desks	6.48	233.28	3	1.30
Filing cabinet	7.78	186.72	2	1.04
Shelving unit	6.48	77.76	1	0.43
Computers and software	27.86	668.64	2	3.71
Photocopier	64.79	777.48	1	4.32
Chairs	0.52	31.20	5	0.17
Partitions	0.21	2.52	1	0.01
Register/log book etc	20.00	2,160.00	3	12.00
Masking/Scotch tape	8.00	3,456.00	6	19.20
File jackets (dozen)	3.33	12,947.04	18	71.93
Sub-total		**24,540.60**		**136.34**
Rentals	400.00	4,800.00	1	26.67
Equipment				
DVD/tape recorder	6.48	77.76	1	0.43
Overhead projector and screen	10.37	124.44	1	0.69
Multimedia laptop	142.54	1,710.48	1	9.50
Scissors	0.91	273.00	5	1.52
Sub-total	**160.30**	**2,185.68**		**12.14**
Material costs and educational toys				
Paper				
Newsprint (150 sheets)	90.00	810.00	3	4.50
Cartridge (50 sheets)	35.00	315.00	3	1.75
Plain (4 reams)	15.00	135.00	3	0.75
Pens	6.67	60.03	3	0.33
Pencils	5.00	45.00	3	0.25
Markers	0.50	225.00	150	1.25
Glue (gallon)	15.00	135.00	3	0.75
Tapes	3.00	27.00	3	0.15
File jackets (dozen)	3.33	149.85	15	0.83
Stapler	10.00	30.00	1	0.17
Educational toy kit	150.00	2,700.00	6	15.00
Sub-total		**4,631.88**		**10.57**
Cost per child				**US$312.53**

The same approach was used to model the costs of other options. The models for pre-school and daycare programmes included the cost of play equipment, food and the infrastructure for feeding children. Each model made assumptions including about the level of staff qualifications and child–teacher ratios. The pre-school model assumed one teacher and one assistant to every 25 children. The pre-school/nursery school model produced an annual per child cost of US$2,176 while the daycare centre model produced a cost of US$2,908 per child.

This modelling exercise is not concerned with how funding costs are met. Accordingly, it has not accounted for the volunteer services and in-kind contributions that often lower financial costs.

4. More results and the conclusions

This review has identified the main cost items in ECCD programmes, who meets these costs, and the large variations in costs. It has also shown how these costs can be estimated.

Large variations in per child programme costs

This review found an enormous variation in per child costs of programmes. Previous reviews showed the same with:

- Levin and Schwartz (2006) finding annual per student costs for 14 countries ranging from US$64 in Indonesia to US$7,881 in USA (in 2001/02).
- Lira (1994) finding annual per student costs ranging from US$340 in Colombia for a community homes programme to US$3,611 for full daycare in Argentina (as of 1993/94).

Box 1 explains the main reasons for the widely differing costs within one programme in Peru and between programmes in Peru (average cost US$55 per child), Colombia (US$313) and Venezuela (US$2,500).

The current author has seen claims for annual per child costs as low as US$2 (in a parental education programme in Mexico). However, whatever the cost, each programme should be looked at on its own merits in terms of its aims and the context. Most importantly, judgements on how expensive or inexpensive a programme is can only be made after calculating the realised benefits.

These per-child costs should be treated with caution. Although the costs per child give some indication of the level and costs of inputs, costs should not be directly and too closely compared across countries, systems and programmes because of the many differences in inputs, benefits, populations served, contexts (dispersed or concentrated, price structures and insertion in markets), hours of operation, in-kind contributions, and other factors.

Three further reasons call for treating per child cost figures as only broadly indicative:

- Availability of information. Important information is often not available with much of it hidden in aggregated categories and spread around different sources. It is crucial to try and source disaggregated cost data and also to use interviews and field observations for cross-checking figures from official budgets and expenditure records.
- Accounting for 'hidden' costs. Most cost studies focus on direct operational costs and neglect to account for the contributions in time, in-kind and in cash made by families, volunteers and private organisations. These contributions can be very important, in particular in the community-based non-formal programmes carried out in poorer and remoter areas.

Box 1. The differing costs of three early childhood development programmes

Peru. The annual cost per child of the Programa No-formal de Educación Inicial (PRONOEI) programme in Peru in 1984 was estimated to range between US$39 and US$84 in the programme's four states (Cereceda 1984). The basic pre-school programme model, technology, age of children enrolled, and programme duration were the same across all four states. The main reasons for the variation were large differences in the numbers enrolled and a community development component included in one state, which increased the cost per child there.

Colombia. The annual cost of the Colombian Home Daycare Programme in 1992 was estimated at US$313 per child (Castillo, Ortíz, and González 1993). This programme was more costly than the Peruvian programme because:

- It had both daycare and child development components, whilst the Peruvian programme focused on preparing children for school
- Its higher caregiver–child ratio of 1 to 15, compared to about 1 to 30 in the Peruvian programme
- The children remained in the daycare home for eight hours a day compared to only three hours in the Peruvian programme.

Venezuela. The annual cost per child of Venezuela's home daycare programme in the 1970s was estimated at about US$2,500 (Teran and Barrios 1978). Although the basic model was the same as the Colombian programme, the caregiver–child ratio was much greater (1 to 5) with children cared for 12 hours a day and a variety of extra supervisory and social services provided.

Note: All dollar amounts are in constant 1994 US dollars.

Source: IADB 1999

- Writing off capital costs gradually. Some studies account for the costs of new buildings and equipment in the year of expenditure rather than writing them down over their useful life.

The distribution of costs

This review identified four main trends in the distribution of costs between the various cost categories.

Main programme costs. The highest proportion of expenditure usually goes on personnel costs or on food. There are, however, major exceptions to this. For instance, the Bolivian example of the costs of home daycare using para-professionals suggested that salaries accounted for only 13 percent of costs. However, this is probably an underestimate as a shadow price was not placed on the para-professionals' time. Underestimating personnel costs can render programmes unsustainable due to a lack of financial support for essential salaries and benefits. In the Chilean case, personnel costs were over 50 percent of costs.

Not really free of cost. In many public programmes that purport to offer free education, families and communities have to bear a significant part of the costs. Budget analyses often miss parents' contributions in the shape of fees, school uniforms, books, transport, their time assisting with teaching, cooking, building construction and fund raising, and their donations of materials, equipment, food and infrastructure.

Myers' (1995) on-site estimates of the costs of running pre-schools in a poor and remote area of Mexico found that parents and the local communities met 25 percent of the total costs in one school in a system where education was supposed to be free. Cereceda (1984) found communities to be contributing between 38 percent and 58 percent of pre-school running costs in a programme in Peru.

An impact study of four models of daycare for young children (Pineda 2006) separated out the costs to families. These were found to include monetary payments for enrolment, school maintenance and other needs as well as for transportation, clothing, learning materials and snacks. The study also accounted for the opportunity costs of the time parents spent on training and at parent association meetings. The value of this time was based on the national minimum wage.

The argument here is not that parents and communities should not contribute, but that their contributions should be recognised and accounted for.

Supervision, monitoring and investment costs. The costs of supervision, monitoring and on-the-job training usually constitute an inadequate percentage of overall costs as funds budgeted for this are very low or may be diverted elsewhere.[5] This reduces the quality of the service. In the same way, investment costs that help to renew programmes rarely account for more than 10 percent of programme costs.

Identifying the actual costs

This review has shown how studies other than those based on budgets and central level expenditure records can more accurately show actual costs.

- **Costs of individual centres**. Few studies have estimated the costs of specific learning environments such as centres and homes. Doing this can show how actual costs vary between different learning environments within a programme, across programmes and between activities supplied in different ways – for example, by the government or by local volunteers. This can shed light on questions of equity in the level of resources provided to different places and different groups of people, and in who bears the costs.
- **Sample surveys**, such as the one carried out in the above Chilean example, are a little used but promising way of discovering how much families spend on education. One drawback of this method is that it does not pick up the contributions of volunteer time or other in-kind contributions.
- **Modelling the costs** of mounting a programme (as in the Caribbean example) of 'good enough' quality can be a very useful planning exercise that provides a baseline for drawing conclusions later about the actual costs incurred.

Closing thoughts

It is right to be sceptical of cost estimates for early childhood development programmes. As well as questioning the accuracy of figures it is helpful to see from whose viewpoint estimates are being presented, to determine what 'ingredients' were taken into account, and to identify what assumptions were used to assign values to the ingredients.

More use should be made of costing information to assess whether or not vulnerable children are receiving adequate quality services. This consideration has often been neglected as decision makers usually preoccupy themselves with calculating the costs of programmes with little consideration given to the larger social picture. As a counterpoint to seemingly scientific attempts to determine national costs from often questionable sets of assumptions about how things should or might work, international organisations and national governments should put much more emphasis on looking at how resources are actually put in place and spent in practice and at who is actually providing them.

[5] In addition, supervisors may not provide the service they are supposed to, thus reducing the quality of the services in spite of expenditure on supervision.

References

Acosta, A. (1994). *El programa de hogares de cuidado diario en la república de Venezuela*. Consultant´s report presented to the Inter-American Development Bank (IADB). Santafé de Bogotá: Centro Internacional de Educación y Desarrollo Humano (CINDE).

Berg, A. (1987). *Cost Analysis in Education. A Tool for Policy and Planning*. EDI Series in Economic Development. Washington DC, USA: The World Bank Economic Development Institute (EDI).

Bosch, A. and González P. (2006). *Costos de las principales modalidades de atención en Chile*. Pages 252–308 *in:* Raczynski, D., Kotliarenco, M.E., González, P., Bedregal, P., Bosch, A., Correa, J., Larraín, M.I. and Salinas, D. Chile: Lineamientos de política para la niñez temprana (menor de 4). Informe final revisado. Unpublished document. Washington DC: Inter-American Development Bank (IADB).

Castillo, C., Ortíz, N. and Gonzalez, A. (1993). *Los Hogares Comunitarios Bienestar y los derechos del niño: el caso Colombiano*. Innocenti Ocasional Papers, Chile Rights Series No. 3. Florence, Italy: United Nation Chidren's Fund (UNICEF) and Internacional Chile Development Centre.

Cereceda, M. (1984). Study of costs. Unpublished document prepared as part of an evaluation of 'Pre-school Education as a Catalyst for Community Development' programme. Lima, Peru: United States Agency for International Development (USAID).

Ciavatta Franco, M.A. (1983). Da asistencia educativa a educacao assistencializada: Um estudo de caracterizacao e custos de atendimiento a crianzas carentes de 0 a 6 anos de idade. Unpublished research report. Rio de Janeiro, Brazil: United Nation Chidren's Fund (UNICEF) and Centro Nacional de Recursos Humanos.

Consultoria Asesoria y Servicios Latinas (1998). *Análisis y evaluación de impacto de medio termino del Programa Nacional de Atención a Niños y Niñas Menores de Seis Años*. La Paz, Bolivia: The World Bank.

IADB (Inter-American Development Bank) (1999). *ECCD Guide: A Toolkit for Early Childhood Care and Development*. Washington DC, USA: IADB.

IADB (Inter-American Development Bank) (2006). *Estimación de costos y efectividad de programas de desarrollo infantil existentes en Chile, Honduras y Nicaragua: Resultados sustantivos y lecciones aprendidas*. Informe final Cooperación Técnica ATN/CT-9448-RS, Prevención de Retrasos en el Desarrollo Infantil. Report prepared by Cecilia Breinbauer for IADB. Washington DC, USA: IADB.

Issa, S. (2006). *A Costing Model of the Madrassa Early Childhood Development Programme in East Africa*. Consultant´s Report. Geneva, Switzerland: Aga Khan Foundation.

Jarousse, J.P., Mingat, A. Tamayo S. and Tan, J.P. (1996). *Cost Analysis in Education, A Three-Part, Hands-on Training Module*. Washington DC: The World Bank.

Levin, H.M. and McEwan, P.J. (2001). *Cost Effectiveness Analysis, Methods and Applications*, 2nd Edition. London, UK: Sage Publications.

Levin, H.M. and Schwartz, H. (2006). *Costs of early childhood care and education programmes*. Background paper for the Education for All Global Monitoring Report. New York, USA: National Center for the Study of Privatization in Education, Teachers College, Columbia University.

Lira, M.I. (1994). Costos de los programas de educación preescolar no-convencionales en America Latina, revisión de estudios. Unpublished document. Santiago Chile: Centro de Estudios de Desarrollo y Estimulación Psicosocial.

Marquéz, A. (2007). Programas no convencionales de cuidado y desarrollo de la primera infancia en América Latina: ¿Cuál es la mejor opción en función de costos? (Revisión de estudios). Unpublished background paper prepared for this review. México Federal District: Hacia una Cultura Democrática (ACUDE).

Masse, L.N. and W.S. Barnett. (2002) *A benefit-cost analysis of the Abecdarian Early Childhood Intervention*. New Brunswick, New Jersey, USA: National Institute for Early Education Research, Rutgers University.

Myers, R. (1990). A review of the AKES Day Care Centre Programme. Prepared for the Aga Khan Educational Services (AKES), India and the Aga Khan Foundation. Geneva, Switzerland: Aga Khan Foundation.

Myers, R. (1995). Case studies of two preschools in the Alta Mixteca of the State of Oaxaca. *In:* Myers, R., Delgado, M.A. and Guido, L. Pre-School Education in Mexico, A Social Policy Analysis. Appendix 1. Unpublished report prepared for the Secretary of Public Education, El Consejo Nacional de Fomento Educativo (CONAFE) and the World Bank. Mexico, Federal District.

Pineda, N. (2006). Evaluación de impacto de algunas modalidades de atención a la primera infancia. Unpublished document. Santafé de Bogotá: Centro Internacional de Educación y Desarrollo Humano (CINDE).

Raczynski, D. (Coordinator), Kotliarenco, M.A., Gomez, P., Bedregal, P., Bosch, A., Correa, H., Krebs, M., Larrain, M.I., Salinas, D. and Vives, A. (2006). Chile: Lineamientos de política para la niñez temprana (menores de 4 años). Unpublished report prepared for the Government of Chile and the Inter-American Development Bank (IADB), Washington DC, USA.

Save the Children USA (2005). Education programmes: Project costing guidelines. Unpublished document. Westport, Virginia, USA: Save the Children.

Schweinhart, L.J., Montie, J., Xiang, Z., Barnett, W.S., Belfield, C.R. and Nores M. (2007) *Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40*. Ypsilanti, Michigan: High/Scope Press.

Teran, C. and Barrios, A. (1978). Evaluación del Programa Hogares de Cuidado Diario. Estudio ejecutivo. Caracas, Venezuela: Funcación del Niño y United Nation Chidren's Fund (UNICEF).

Vargas-Barón, Emily. (2008, forthcoming) *Early Childhood Finance: An Exploration of Investment Opportunities and Challenges*. Washington, DC: The RISE Institute.

Williams, S., Morrison K. and Watson-Campbell, P. (2004). *A draft model for financing and investment in early childhood development in the Caribbean*. Child Focus II Project/Inter American Development Bank (IADB) and Caribbean Child Development Centre (CCDC), University of the West Indies. Kingston, Jamaica: CCDC.

About the Bernard van Leer Foundation

The Bernard van Leer Foundation funds and shares knowledge about work in early childhood development. The foundation was established in 1949 and is based in the Netherlands. Our income is derived from the bequest of Bernard van Leer, a Dutch industrialist and philanthropist, who lived from 1883 to 1958.

Our mission is to improve opportunities for children up to age 8 who are growing up in socially and economically difficult circumstances. We see this both as a valuable end in itself and as a long-term means to promoting more cohesive, considerate and creative societies with equality of opportunity and rights for all.

We work primarily by supporting programmes implemented by partners in the field. These include public, private and community-based organisations. Our strategy of working through partnerships is intended to build local capacity, promote innovation and flexibility, and help to ensure that the work we fund is culturally and contextually appropriate.

We currently support about 140 major projects. We focus our grantmaking on 21 countries in which we have built up experience over the years. These include both developing and industrialised countries and represent a geographical range that encompasses Africa, Asia, Europe and the Americas.

We work in three issue areas:

- Through "Strengthening the Care Environment" we aim to build the capacity of vulnerable parents, families and communities to care for their children.
- Through "Successful Transitions" we aim to help young children make the transition from their home environment to daycare, preschool and school.
- Through "Social Inclusion and Respect for Diversity" we aim to promote equal opportunities and skills that will help children to live in diverse societies.

Also central to our work is the ongoing effort to document and analyse the projects we support, with the twin aims of learning lessons for our future grantmaking activities and generating knowledge we can share. Through our evidence-based advocacy and publications, we aim to inform and influence policy and practice both in the countries where we operate and beyond.

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