

Measuring Classroom Costs in Early Education Programs

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INTRODUCTION

There are a number of preliminary issues to address that determine what costs are to be measured and the kind and source of data to be collected:

- measuring cost at the classroom level, the program level, the center level
- the unit of measurement to be used: e.g., cost per child hour, cost per room
- the unit of time in which measurements are estimated: child hour, child day, child year
- the source of data and the method of collection: e.g., direct observation (for room staffing and group size), site director/owner interview, site inspection of records, phone interview of director/owner
- what center financial records are used: e.g., annual financial statements (historical data for an earlier period that may not reflect, for instance, costs of producing current quality), current monthly financial statements, staff and enrollment records

These decisions depend, in large part, on the goals of the research. For instance, goals could include:

- the relation between cost and quality of services: with respect to specific services - infant care - in given infant rooms, with respect to specific classrooms, with respect to overall center quality and center-level costs.
- The effects on cost and quality of alternative cost-saving strategies, at the room level or the center level
- The effects on cost and quality of alternative quality-improving strategies, at the room level or the center level
- The cost/child by program and the relation to profits
- The cost and revenue implications of adding a room
- Economies of scale

Cost per child hour. Normally, costs are estimated per unit of service produced over a given time period: e.g., cost per child hour. Financial data from profit and loss statements provide a breakdown of annual costs and revenue for the center as a whole. To estimate cost, revenue, surplus or loss per child hour (or day...), it is necessary to divide this annual data by the number of child hours (days...) produced. This means that data on enrollment or attendance must be collected and converted into number of FTE children in the classroom, program, and center.

- One can measure the number of children enrolled, number of children in attendance, center capacity or maximum number of children to be served. Since most centers are paid based on enrollment rather than attendance, the former is a better measure to use, particularly since it is probably more accurate (centers may not keep track of number of children attending in each class or program and if they do, there is more variation day-by-day than in enrollment).
- One can use head count or FTE (full-time equivalent children). Number of FTE children should be used in order to employ a common denominator.
- Measuring FTE children: Identify the number of hours considered a full day for a typical child in each age-group. Then consider children in part-time attendance as $\frac{1}{2}$ day/week = .1 FTE, 1 day/week = .2 FTE.
- Cost per child hour does not capture all the differences in cost. For instance, programs with a six hour day have higher cost per child hour than programs with a nine hour day.

Direct Classroom Cost

For centers with part-time programs, the same room can be used for two different programs, (e.g., M.W.F. preschool and T.Th. preschool, or daily preschool in the a.m., daily kindergarten or after school program in the afternoon.) This complicates data collection and should be planned for ahead of time. In this paper, it is assumed that the main reason for allocating costs to individual classrooms (or programs that involve more than one classroom but only a fraction of total enrollment) is to study the relation between cost and quality. If this is the purpose of the research, then all costs related to quality must be included in classroom cost, whether or not the service is provided by the staff assigned to a particular classroom. This becomes a problem when centers have staff and facilities that are used by more than one program.

Labor Cost.

Labor cost is based on the FTE staff assigned to the room or program. There are several approaches to data collection and estimation. Our preferred approach requires collecting information on hours worked/week, wage, and benefits for each staff person assigned to the room. Information describing the classroom (age-group served, # FTE children, program type, full year or school year) would also be required. The data would have to be collected by classroom, preferably using center records rather than the director's recollection. Labor costs would then be computed by summing total annual compensation for each staff person in the room. One problem with this approach is maintaining confidentiality. Staff members could be identifiable at the room level.

An alternative would be to use center's annual financial statement of wages and benefits, allocating this to individual rooms or programs based on some rule: e.g., the proportion of labor costs accounted for by the staff assigned to the room. This procedure would still require some mechanism for determining the proportion of labor costs allocable to the room, which would probably require collecting the same information as suggested by the first method.

It is not appropriate to allocate labor costs to a room based on the proportion of FTE staff. It is necessary to take into account the composition of staff in a room in terms of job classifications. Different proportions of lead teachers, teachers, aides can be used, affecting costs and quality. Center financial statements are not broken down by payments according to staff job classifications.

A disadvantage of allocating costs according to past financial statements is that the cost data would reflect past staff composition. This is a serious problem in an industry that experiences high rates of staff turnover and past staff may differ from present staff.

It might be possible to estimate labor cost by allocating labor costs based on current payroll data for the center. One problem with this approach is that data for one month may not reflect costs for the rest of the year.

The turnover problem in staff creates a real conundrum. Classroom quality could depend on the previous staff as well as current staff, for instance in the behavior of children. Neither data set, current payroll data nor year-end financial statements, would give the complete picture.

In estimating the cost of employee benefits if costs of actual staff are used, some noise could be introduced if, for instance, individual staff members choose not to take the insurance because they are covered by the spouse. To avoid this problem, benefit costs could be assigned based on center policy regarding availability of benefits by job classification and hours worked.

Care needs to be taken to include special staff who regularly work with the children for a short period of time, either in the classroom or outside of it. These staff costs could be allocated by the number of hours spent in individual rooms/programs. However, in some high quality centers, where there are special facilities such as an atelier in a Reggio Emilia-inspired center, children can move relatively freely from their room to these other locations and teachers.

Labor costs for floaters/substitutes need to be included as part of classroom labor cost, possibly based on the proportion of FTE staff in the room. If based on actual use of floaters and substitutes in a classroom, if one or more staff member in a class is frequently absent, this may raise expenses and lower quality.

If volunteers are used in the classroom, a decision must be made as to whether or not to include an in-kind cost. Economists normally make this decision based on opportunity costs of the volunteer, whereas it would seem more appropriate to estimate the cost in terms of opportunity costs of the center. In CQO we encountered one really interesting instance, a center operated by nuns who received no wages. One issue is to what extent do volunteers replace paid staff (not usually permitted in most states), to what extent do they add something that affects quality that would have to be paid for if volunteers were not available? A fuller discussion of imputing costs for volunteers and in-kind donations is included in the paper on Non-Classroom Costs.

Other Direct Classroom Costs.

Although expense categories identified below are direct classroom costs, center fiscal year financial statements do not break down costs by program or classroom. Therefore, as in the case of indirect costs, these costs must be allocated according to some rule. Fiscal year financial statements should be used as the source of cost data. For centers serving only one age group, allocating these expenses is much easier since the allocation can be based on proportion of FTE children in the class.

Food/meals. This is probably the easiest to allocate. Two types of cost are involved: food costs and labor costs if the center employs a cook and kitchen staff. Kitchen staff costs could be allocated by FTE children in the classroom. Well-organized centers will have a good idea of the food cost/meal by age group. Usually, the food served is the same across classes, only the portions differ. Costs can be allocated based on FTE children in the room adjusted for portions. For centers with little information about relative cost by age group, cost/meal by age-group could be inferred from centers with the information. In infant rooms, often parents supply milk or formula. Some centers bring in catered food. Many centers supply only snacks. Data collection instruments need to be designed to get such information.

Materials and supplies. Cost per FTE child varies according to the program, so allocation should be based on proportion of FTE children in the class, adjusted for the age-group since the type and amount of materials vary significantly based on the age of the children. It is not clear how to determine the adjustment, although some centers may have records of materials cost per room, at least as a start-up cost.

Furnishings and equipment. These are relatively fixed, at least multi-year, costs that should be depreciated over time. Centers are not likely to know what they are depreciating, although we were able to get a total estimate of depreciation in CQO. There are also equipment rental and maintenance costs, and non depreciated equipment that appear in financial statements. Sometimes outdoor play areas are attached to individual rooms and these costs should be included. In other centers, children rotate in and out of the same space. Furnishings and equipment costs could be allocated by number of FTE children, again, adjusted for age group, possibly based on studies of relative costs of outfitting classrooms for different age-groups.

Facilities maintenance/improvement (for the room). Literally, this is a direct expense; however, it should probably be included in non-classroom expenses and allocated based on proportion of total classroom square footage.

In-kind Contributions. This is not a large item for an individual room and center directors usually know which rooms make use of in-kind donations. See the paper on Non-Classroom Costs for a discussion of estimating these costs.

Indirect Classroom Costs.

This topic is discussed more completely in the paper on Non-Classroom Costs. It is particularly important to identify and allocate expenses that relate directly to the quality of services provided in an individual classroom or program.

Training costs need to be included and centers do keep track of these expenditures for the center as a whole. They should be allocated directly to a classroom when the center awards a scholarship or pays tuition or provides released time to individual staff members. More generally, training expenditures involve center teaching staff as a whole, and are an indirect cost that needs to be allocated to classrooms, probably based on FTE staff involved. It is not clear what to do about voluntarily declined training, for instance by senior staff who already have the training.

Some centers, particularly good quality ones, children make use of facilities that are generally available: an indoor gym, outdoor play facilities, a computer room, a music room, an atelier. These facilities usually have specialized teachers attached to them. Costs of these facilities and staff need to be allocated based on which programs make use of them, a time allocation, and FTE children in the room/program. In some centers classes may merge and dissolve in many ways so there may not be a clear delineation of what is the class and what are its costs.

In many centers children (2-5 year-olds) are congregated in one room at the beginning and end of the day to conserve on staff when the full complement of children are not present. This cost could be allocated based on the proportion of FTE children in the room. This could affect quality as higher quality centers tend not to use this practice as much. For instance, in centers that assign a primary caregiver to each child, children immediately go to their own room on arrival at the center and are picked up by their parent in that room so they can form a relation with the staff members who work directly with their children.

A concluding thought

An important issue that has come up in this exercise of identifying classroom costs and then allocating costs is when to use class-specific costs, and when to use average costs based on some allocation algorithm. Partly, this is a practical matter determined by the availability of cost data. We seem to be moving toward using class specific costs for classroom teaching staff and average costs for everything else. Even so, moving too much toward class-specific data could introduce its own noise. Class-specific costs may not relate to quality, or it may be inversely related, as in the case of classroom costs for substitutes that raise costs but may lower quality.