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ABSTRACT

This report, a supplement to a previous report, presents final evaluation material on the success of the USOE incentives project. Either a teacher model or a teacher/parent model was implemented at a school in each of four sites -- Duval County, Florida; San Antonio, Texas; Cincinnati, Ohio; and Oakland, California. The report describes final site and teacher activities; presents a cost analysis of school, teacher, and parent resources; and discusses policy implications and incentive model variations. The report analyzes the impact of the project as a change agent as well as evaluates project results. Policy implications of the results are presented for Federal, State, and local levels. An appendix contains detailed analysis worksheets showing the calculations for the per-pupil costs of school resources for both control and experimental schools in the project. Related documents are EA 004 804 and EA 004 874. (JF)

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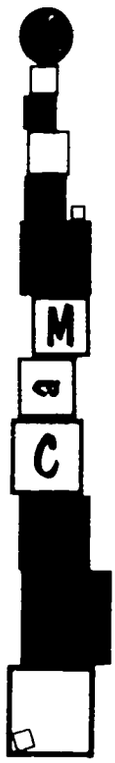
FINAL REPORT



USE OF INCENTIVES PROJECT

U.S. OFFICE OF EDUCATION
Washington, D.C. 20202

Contract OEC-0-71-4768

Submitted by:

MONITORING and ASSISTANCE CONTRACTOR

July 31, 1972

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FINAL REPORT

from the

MONITORING AND ASSISTANCE CONTRACTOR

of the

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As the first structured field experiment in education which tested the offer of incentives to parents and teachers for improving student performance, this project would never have been implemented without the cooperative efforts of many. Education Turnkey Systems, Inc. expresses its appreciation to all the participating school districts, especially the four Project Directors for bearing the burden of data gathering and reporting. The cooperation of other administrators, teachers, and parents interfacing with our operation was excellent, with few exceptions. The close working relationship between the U.S. Office of Education Project Director, Mr. Edward Glassman and the Planning and Evaluation staff and Education Turnkey personnel would be considered enviable by most government contractors engendering a good working relationship.

The team effort of Education Turnkey staff also merits personal appreciation; Hunter Temple, project manager and senior analyst; Alfred Morin, documentation; Howard Lesnick, responsible for the curriculum audit; Don Pricer, chief management and technical assistant; Blair Curry and Jack Sweeney, responsible for the cost analysis; the four on-site monitors, Joshua Theriot, Beverly Crooms, Tim Nicholson, and Price Michael; and especially the administrative support staff for "putting up" with the staff professionals.

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CHARLES BLASCHKE
PRINCIPAL INVESTIGATOR

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PART I: A PROPER PERSPECTIVE

The use of incentives in education is not new. During the last half of the 19th Century, teachers in England received payments based on students' results as verified by an inspector general. In Canada, "payment based on student results" emerged during the early 1900's and then disappeared as teachers started "teaching to tests." At the same time, many parents have rewarded their children for good marks in school for many years. More recently performance contracting firms have rewarded students based upon their performance and in turn have been "rewarded," or penalized, by payments from the school district. The purpose of this project, based upon a review of the past use of incentives in education, is to determine what impact, if any, the offer of incentives to teachers and parents will have on student achievement and to determine the nature and extent of any change process which occurs.

With the recent emergence of the use of incentives in education, it is important to put this particular project into its proper perspective. First, much of its controversial nature can be attributed to exaggerated reporting by the media. Because of several other projects which, on the surface, appear similar to this one, the general reporting has been less than clarifying. And secondly, the intent of this program and its mechanics differ from other related "incentives projects" presently operational across the country.

Related Incentive Projects

The following projects, which use incentives in one way or another, are presently operational or have just been completed. In order to put the U.S.O.E. Incentives Project in proper perspective, its similarities with a representative sampling of several other projects are presented below in terms of the source of financial and other support,

the size of the project, instructional systems used, the test instruments implemented, and the incentive structure and payment determination formulae. This is not an exhaustive list, but it is representative.

Support

Most incentive projects at the locol education agency level have been funded by federal ESEA legislotion either directly to the locol agency, or through the respective state departments of education. The Bristol, Virginia ond Wethersfield, Connecticut projects were two of the first ten "Right to Read" projects funded. The Mesa, Arizona and Stockton, California projects were part of the O.E.O. sponsored Performance Incentive Remedial Education Experiment. In Dade County, Florida, where individual teachers from two schools were under incentives contracts with the Board of Education, the project was conceived and designed locolly, utilizing ESEA Title I funds. The U.S.O.E. sponsored and designed the field experiment called the Use of Incentives Demonstration Project. While the budget for "management assistance" and "testing and analysis" was funded under ESEA Title IV, Section 402 (Program Evaluotion), the operating and incentives budgets for this project were funded under ESEA Title III, Section 306 (Commissioner's Discretionary Funds).

Size of the Projects

Most of the existing projects involved one or two school buildings, mostly elementary, with the number of participating students ranging from 350 to 600 per project. For the most part, teachers who were already assigned to the schools (rather than volunteers) are participating. The Bristol, Mesa and Stockton projects did involve some junior high students and teachers. This project differs slightly from the others with respect to the

rigorous manner by which the particular schools in the four cities were selected by the U.S.O.E.

Instructional Systems Used

In the Bristol, Dade County, and Wethersfield projects, teachers designed the instructional system, including diagnostic instruments and the methodologies used. In the Dade County project, teachers were offered a combination of operating costs and risk capital totalling $110 per student which they could use to purchase new and additional materials. In the Wethersfiled and Bristol projects, federal funds were provided for the purchase of commercially available materials as well as technical assistance in teacher training, instructional systems design and program planning. All three projects have individualized, self-paced, mostly programmed instructional systems in math (Dade County) and reading. The Dade County Project uses audiovisual devices combined with contingency management techniques, peer tutors instead of paraprofessionals, and increased class size of up to 1 teacher to 45 students.

In the Mesa and Stockton projects, which started several months after school began, the respective faculties relied heavily on existing programs. Funds were not provided to the respective faculties until after the completion of the project and the determination of results. Hence, unlike the Bristol, Dade County, and Wethersfield projects, no start-up funds were provided by O.E.O. The U.S.O.E. Incentives Project most clearly resembles the Mesa and Stockton projects in this respect. However, while the O.E.O. experiment design did not attempt to determine what changes, if any, occurred in the classroom, the primary objective of the U.S.O.E. Incentive Project is to determine what, if anything, teachers would do differently in the classroom (i.e., ranging from requesting technical

assistance to purchasing instructional materials), when offered incentives based on students' performance.

Measurement Instruments

The differences among the projects regarding test instruments being used for evaluation and payment determination purposes reflect both philosophical as well as pragmatic objectives; criterion referenced test items are used extensively not only for evaluation, but also for payment determination purposes in some projects. In Wethersfield, incentive payments are based solely on mastery levels of behavioral objectives. However, in the other two projects (Bristol and Dade County) approximately 50% to 60% of payment is based upon standardized test scores. In the Bristol and Wethersfield projects, the behavioral objectives were designed by participating teachers who were assisted in the design of criterion items. In Dade County, the Central Program Development Staff developed a "bank" of math and reading objectives, as well as criterion items and furnished them to the respective faculties prior to the design of the instructional program.

In the Mesa and Stockton projects, to the extent which behavioral objectives were used, they had been available prior to the implementation of the two projects. Such instruments were used for diagnostic and prescriptive purposes generally; they were not used as the basis for determining payment. Standardized tests selected by O.E.O. and administered by the Evaluation Contractor were used for this purpose. The U.S.O.E. Incentives Project relies solely on pre-test to post-test gains (as measured by standardized tests) for determining payments due to parents or teachers, although for evaluation purposes, student, teacher and parent attitudinal instruments are being used by the "testing and analysis" contractor. Other instruments had been developed and used by the "monitoring and assistance" contractor to document and determine the extent of the change process.

Incentives Structure and Payment Formula

All projects differ (sometimes significantly) in the amount of incentives and the method for determining their payment. These differences reflect fiscal, political, practical and other major considerations. The Bristol project reflects remnants of the O.E.O. (Mesa and Stockton) project as well as Virginia contract projects recently planned, however, only "free time" for students has been offered as a reward for performance so far. Approximately 65% of the total maximum incentives which the individual teachers can earn is based upon pre to post-test gains in each classroom. For each 20% grade equivalent (g.e.) gain above the expected gain as determined by pre-test scores, pro rated over the number of school years enrolled, the teacher can earn $130 up to a total of $1,300. Also a payment of $200 is available if students on the average master prescribed objectives. For each 20% increase over the prescribed amount, the teacher also receives an additional $200 up to a maximum payment of $800.

The Dade County project utilizes incentives extensively. Students can earn money, tokens, free time, and other rewards based upon their level of performance. Moreover, teachers can earn up to $110 for each student achieving 100% above the expected gain in math and reading as measured by both standardized test scores and successful mastery of performance objectives. Teachers are allowed to spend $55 per student to defray operating costs of the programs designed by the respective faculties, and can "opt" for an additional $55 per student to be used for risk capital for classroom investment purposes. However, a portion of this money will have to be returned if students don't achieve 50% above the expected gain. To insure cooperation, the math and reading teachers share incentives with other teachers when students achieve above certain levels. In addition, the firms

supplying the equipment and materials have underwritten as much as 50% of the risk capital investment, thereby minimizing the individual teacher's risk.

A combination of incentives "components" are being tested in the Wethersfield project. In one component, only students can earn rewards (such as gifts, books, tapes and other educational information rewards) to the extent that they master 100% of the prescribed objectives at a level of 80% accuracy. In a second component, parents can collectively earn a total of $200 if their children's class achieves 80% of their objectives at 80% accuracy. In a third component, both students and parents can earn the incentives equal to the amounts in the other two components if performance levels are achieved. While incentives for teachers were originally planned, this was changed during the program planning phases; teachers have been paid a bonus of $600 for successfully completing the in-service training, which included the development of behavioral objectives.

While the Mesa and Stockton incentives structures were slightly similar to the Wethersfield Project, they were generally dissimilar in the following respects: a) in both sites, teachers offered extrinsic rewards such as gifts, books, trips, candy, etc.; b) students who mastered performance objectives or demonstrated other types of success in the classroom gained the rewards offered; c) in both instances, the Board of Education subcontracted with the teachers' associations and representative teachers on the faculties in the respective schools. The total amount of incentives bonuses which could have been earned by the Mesa school faculty averaged approximately $20,400, or $34.00 per student who achieved the maximum grade equivalent gain above one year's growth. The bonuses available under contract at the Stockton schools averaged approximately $29,940, or $49.90 per student who attained the maximum level gains above one year's growth. Teacher earnings varied due to base salary variances between the two sites. Both

associations were to collect payments and determine allocation of monies internally.

The incentives structure and payment determination formula in the U.S.O.E. Incentives Project is an attempt to be as equitable, as well as simple, as possible. No restriction was placed on teachers or parents regarding incentives for students as rewards for success in the classroom. It was an attempt to determine whether or not parents or teachers felt the concept was merited. Teachers, on the one hand, were provided incentives based upon the pre to post-test gains of their classes on standardized tests. The the typical elementary teacher who taught both math and reading in a self-contained classroom could receive a maximum of $1,200 based upon the mean gain of at least 0.3 G.E. above the Base Gain Indicator (BGI). The BGI's were determined by calculating the difference between two consecutive grade level averages on tests. Adjustments were then made to take into account high, medium, and low achieving classrooms and assigned to teachers individually. Parents, on the other hand, could earn $100 for each child whose classroom achieved at least a 0.3 G.E. growth above the BGI in both math and reading. If students failed to achieve the expected gains, neither the parents nor teachers received bonuses.

PART II: FINAL SITE ACTIVITIES

Cincinnati, Ohio

The condition reported at both the experimental and control schools at the Cincinnati site had not changed since the evaluation report of July 1, 1972. Opposition to the personnel who conducted the pre-test appeared to be minimized by including many more black testers for the post-testing. Our monitor reported that, "During the testing, the teachers were helpful to the testers and did not seem to object to their presence. Generally, they are 'hanging loose' and seem to regard the testing as simply an expected occurrence. No one seemed to be upset by the testing in any way."

Our monitor further reported that once the post-tests had been given, the teachers felt the school year had ended. Much of the activity, at both the control and experimental schools, was in the form of field trips and non-structured types of instruction. Hence, classroom observations were either difficult to schedule or of little use for evaluation purposes.

Attitudes of the teachers had not changed during this final period. Many expressed the feeling that they would be glad when the project was over and the constant observations would end. Of course, some talk was noted at the experimental school regarding the results of the tests and subsequent payments. It should be emphasized that this type of talk was minimal, however, for most of the school's efforts were directed toward all those activities that are necessary in terminating the school year.

Conclusion

The offer of bonus payments has had little impact on the Cincinnati experimental school site. Other factors, such as the general environment of a school without a principal,

have had the most important impact this year. Generally, the lack of concern about the tests and the results are indicative of the reactions that have been reported throughout the year.

Duval County, Florida

Reports from the Duval County site indicate that the post-tests stimulated a variety of reactions and activities. Prior to the post-testing, many of the teachers were testing their students themselves. In fact, one sixth grade teacher was reported to have "used every test you can name because she wants to expose the children to everything she can in order to gear them to taking tests like the post-test." The monitor further reported that, "I saw a rapid change in the last few weeks of the project among the teachers at Livingston (experimental school). They had more field trips for one thing, but otherwise, they were testing kids more and tutoring more and basically giving a last push for good results on the test."

This concern for tests and testing procedures continued on after the post-test was given. The testing procedures at Livingston School (experimental) went smoothly, but some adverse comments about the placement of students were noted.

Perhaps the most significant impact of the post-test was a rumor that was spread suggesting that the lower grade teachers would have a better chance of being paid than the upper grade teachers. As our monitor reported, "Most of the lower grade instructors are white and this only added to the old suspicion that the project is a new way of getting rid of black teachers. In the beginning, the ETS monitor had more support from the upper grades, but since the post-test and subsequent rumor, the upper level teachers have expressed opposition to the project. Certainly, there has been a great deal of talk

about "fairness" and who would get paid. The report of May 27, 1972 stated:

> "There were very many complaints about seemingly small things like the lateness of the contracts, nit-picking about the testing, etc. Basically, the teachers don't feel they have been asked to do too much by the project, but they are bitter because they are afraid they won't be getting paid. It will be interesting to see what the final results will be because the general attitudes toward the project now have changed drastically."

At Carver, the control school, the teachers expressed a general feeling of unhappiness with the testers and testing procedures. The monitor reported that the majority of testers there were new and unfamiliar with the school and its personnel. On further investigation, only 50% of the testers were new to the testing procedures. Hence, many of the teachers' complaints appeared to be unfounded, and, as our monitor later reported, "it seems that the teachers simply did not like the idea of someone making more money when they weren't."

Conclusions:

The constant concern for test results and payment is a clear indication that the offer of incentives has stimulated a great deal of reaction. Demands by the experimental school teachers for additional materials and assistants throughout the year as well as increased allowances for planning time substantiate the impact. Occasionally, however, the concern for achievement and general competitiveness, has had some adverse effects on the general morale of the school.

Oakland, California

The negative reactions from the teachers that were noted throughout the year continued up to the final day. A number of incidents at the experimental school just reinforced the general comments which have been reported earlier.

Just prior to the post-test date, two teachers became extremely upset over the placement of their students. This resulted in a rather stormy session with the principal and a subsequent call to both the MAC and TAC. After a lengthy telephone conversation with PLANAR, the two teachers were satisfied and the testing proceeded without further incident. It is interesting to note that one of the teachers involved had repeatedly told our monitor that she felt the program was "unprofessional" and a waste of the taxpayers' money, yet she was extremely concerned that she get a fair break in the testing placement of her students.

Each teacher, according to the contract, was to submit in writing a description of her teaching techniques. The results from Oakland have been documented in Part III of this report. The lack of response is another indication of the intensity of general opposition to the project. In addition, MAC asked for samples of teacher generated materials in order to conduct an audit of the types of questions asked of the students. Although some teachers did comply, the MAC received a letter from the principal stating that (1) the request was submitted too late in the year, (2) most staff members stated that all of their materials have been given to parents during conferences and at report card periods, (3) submission of any materials, at this date, would be fragmentary, and (4) the materials remaining, if any, would not truly represent the "on-goingness" of the instructional program. In short, some of the teachers felt that MAC would use the materials to evaluate their performance. This suspicious attitude is consistent with

previously reported incidents.

Many of the final comments of the teachers indicated that they would have been more pleased with the project's program if they had been given more specific guidelines regarding what was expected of them. Our monitor's final comments reflect this, "If teachers and the community were more aware of the objectives of the experiment, and if some pre-planning had been done with them at the beginning of the project, they would have been more helpful and aware of what was going on."

Conclusion:

Throughout the year, the Oakland site has been the most volatile. This is due, in part, to the administrative style of the experimental school principal, in part to the educational environment of Oakland, and in part to a number of vocal teachers who have opposed the incentives idea from the start. Certainly, the incentives project was ever present in the minds of the experimental school teachers. Our monitoring reports did indicate that the project stimulated increased pressure on the administration for additional services and assistance.

San Antonio, Texas

Due to the school calendar in San Antonio, there were few opportunities to observe classroom activity once the post-test was completed. Hence, our observational data is limited to just a few weeks, but in that time we were able to get a good response from the teachers on their activities. The analysis of teachers' activities follows in Part III.

The complete response as well as total cooperation in providing MAC with teacher generated materials is indicative of the general receptivity to the project throughout the

year. Although some teachers still disliked the idea of "bonus incentives," the majority were willing to cooperate. Most tended to feel that "they wouldn't get anything." This should, however, be interpreted as a defense mechanism in the event they, in fact, did not receive a bonus.

The principal of the experimental school continued to have an influence on the project. She was reported to have said to a class of students about to take the post-test, "Well, I hope we are all going to be $100 students today." She was also reported to have taken special efforts to encourage the new teachers to "do your best."

The parents did begin to respond a little more toward the end of the project. This was undoubtedly due to the contracts that were sent out for them to sign. The monitor reported on May 6, 1972, "One parent had called another of the teachers wondering about all the materials she had received concerning the project. She didn't understand it, but the teacher told her to just read it and sign it, so she could get her money. Another teacher agreed that there was too much material with the contracts and many of the parents didn't understand it -- it should have been shorter and right to the point."

One of the big problems throughout the year in San Antonio was informing the parents of the project. A number of teachers interviews at the end of the year indicated that most of their parents were totally unaware of the project. Even though the word was passed at PTA meetings and the MAC monitor interviewed 180 experimental school parents, little was done to actively canvass the parent group. One teacher told the monitor that if the contracts had been sent out in the fall, more parents might have responded.

Conclusion:

The project continued to run smoothly in San Antonio as the teachers responded

totally to the request for cooperation. Although a few continued to profess a dislike for the concept, all were anxious to see the results and "hopefully" receive a bonus. There still was little evidence, however, that test preparation or other techniques used in other sites were prevalent in San Antonio. Due to the mixed bag of teaching experience and ability, in the experimental school, it is difficult to generalize about the different teaching activities that took place. This is substantiated by teacher interviews conducted after the scores were known.

PART III: SUMMARY OF TEACHER ACTIVITIES

Cincinnati, Ohio

All 15 of Cincinnati's experimental teachers responded in detail to the request for narrative summaries of their activities over the year. Although none of these teachers praised the Incentives Project, only five expressed negative thoughts regarding its intentions.

The most universal method mentioned by the teachers was the ability grouping of their classes; 11 teachers said that grouping was their most important means of organizing. Eight teachers felt that peer tutoring, which a few had never encouraged before, was extremely effective as a learning device. Six teachers tried very hard to individualize instruction whenever possible.

The Cincinnati teachers used many resources to aid instruction. Nine teachers specified that they made many learning aids such as charts and games and also used them extensively. Six teachers felt that workbooks and assignments sheets were very helpful; six teachers also specified using machines like TV and tape recorders, etc. to increase learning. Only one teacher mentioned needing more resources for instruction.

Four teachers rewarded students extensively for good work. These teachers also kept records, via star charts, of the children's progress on assignments. Only four teachers said that they encouraged heavy use of the library for their children, but many more probably used the school library although possibly not as extensively.

As was evidenced by our monitor's observations, there was little school contact with parents in Cincinnati. Only two teachers mentioned in their letters that they had contacted parents more this year than before. These two had really tried to get their classrooms' parents more involved with school and helping children with their assignments,

but the general trend among teachers was to not contact parents.

In summary, it seems that the Cincinnati teachers were never very "involved" with the Incentives Project. Their responses included only one from a teacher who felt strongly enough -- positively or negatively -- to even express an opinion about the project. Most of them never even mentioned the project when relating their activities for the year and the five who did mention it said that none of their activities were different because of it.

Duval County, Florida

In summary, 24 of the 27 experimental school teachers responded to our request for narrative summaries of their activities. None of them expressed strong negative feelings about the incentives idea, although some did say that they did not feel it was an appropriate way to increase the learning skills of the children.

Ten of the 24 respondents felt that incentives to teachers were a good idea, but few of them admitted being strongly influenced by the reward. Ten teachers specified that the methods they used were not thought of or initiated because of the project; they said they had done nothing differently, merely as a result of the perceived reward, that they would not have done under normal circumstances.

The most often mentioned teaching methods used by Jacksonville teachers were those which apply to individualizing instruction. In nearly all classes, children were internally grouped according to their abilities. Of the responding teachers, 11 mentioned using this method and our monitor reports indicated that the grouping was almost universal in the school. Ten teachers said they encouraged children to read on their own and gave them additional books to read. Five teachers encouraged their children to help each other. Flash cards, games, charts, etc. were mentioned by 13 teachers and many

made their own such instructional aids. They seemed to feel, collectively, that the learning experience should be varied and often entertaining to the children.

Seven teachers very strongly felt that the school had a serious lack of materials and many also mentioned that the construction work going on during class time had been a tremendous barrier to their on-going programs.

Three teachers felt that some parents were more involved with the school because of the project, and were helping their children more at home. These three teachers also said they had tried harder to meet their parents this year.

The general feeling among teachers as expressed in their letters, was one of acceptance to the project. A number of them felt that incentives would not be effective and that good teachers would not do better work because of rewards, however, they were willing to go along with the experimentand some actually seemed encouraged by it to try harder.

Oakland, California

The experimental teachers' response to the request for narrative opinions about the project was extremely poor in Oakland. A total of only 10 teachers actually responded (out of 17 teachers involved in the project) and six of these responses were merely to say that "I have not done anything differently this year."

The other four teachers mentioned some of the activities they felt had been effective (such as group divisions, library work, and specially made charts), but this is hardly sufficient to determine general trends among the experimental school teachers. One teacher felt that peer assistance had been a useful method. Of the four who did summarize some of their activities, three also said that their work had not been inspired by the offer of incentives and the third never mentioned the project at all -- either

positively or negatively.

This response could well be regarded as characteristic of the general attitude among the Oakland teachers and parents for the whole year, even though the response of eight teachers is hardly a majority of those involved in the project. The fact that the rest of the teachers did not even respond could well be a better indication of their feelings than what they might have written.

San Antonio, Texas

The experimental school teachers in San Antonio have responded well all year to the demands of the Incentives Project; in response to the request for their activities narratives, 15 of the 16 teachers wrote letters which were quite explicit.

Seven teachers explained that none of their activities were different because of the project, but only one expressed a strong negative opinion about the incentives idea. Five teachers liked the idea enough to say that it encouraged them to work harder.

The main emphasis among San Antonio teachers was on individual kinds of work for the children although there seemed to be little "individualized" instruction. Generally, children were not ability grouped -- only one teacher mentioned grouping her class. Seven teachers often had their children reading or working on assignments by themselves. Seven teachers also used workbooks and worksheets heavily. Only three teachers said they encouraged the children to work together and help each other. Five teachers had their children write a great deal. They were encouraged to write stories and think of endings for stories, but this work was, of course, done individually.

Eight teachers mentioned the use of flash cards (which they often made themselves) and games in which the children would cooperate and collaborate with each other. Five teachers said they often took their classes to the library and encouraged them to read

extra books outside of school.

Five teachers felt that parents were more involved with school and their children's school work than in previous years, but only one teacher said she had met more parents this year.

Although there were many field trips taken this year by experimental classes, only two teachers mentioned field trips as an effective teaching method.

In summary, the teachers' letters were cheerful and generally quite detailed regarding their teaching methods although many of them did not feel that the incentives offer had affected their efforts.

SUMMARY OF TEACHER ACTIVITIES

Activity/Method/ Statement	Cincinnati	Duval County	Oakland	San Antonio	Total
Incentives idea is good.	-0-	10	-0-	5	15
Nothing done differently because of the project.	5	10	8	7	30
Children in ability groups	11	11	1	1	24
Encourage peer assistance and interaction.	8	5	2	3	18
Encourage individual reading and work	6	10	-0-	7	23
Use workbooks, work-sheets, etc.	6	1	-0-	7	14
Use TV, record players, tape recorders, etc.	6	9	-0-	5	20
Use games, charts, flash cards, etc.	9	13	3	8	33
Children write stories and other assignments.	-0-	2	-0-	5	7
Take classes on relevant field trips.	-0-	3	-0-	2	5
Use rewards as incentives.	4	2	-0-	2	8
Encourage library use.	4	3	1	5	13
Need more materials.	1	7	-0-	1	9
Parents are more involved because of the project.	-0-	3	-0-	5	8
Teacher has met more parents this year.	2	3	-0-	1	6
Total Responses	15	24	10	15	64

PART IV: COST ANALYSIS

Introduction

A cost analysis component is included as a portion of the analysis of the Incentives Project for a variety of reasons:

1. It is necessary, in all four sites, to obtain a measure of the resources devoted to the students in the incentives program, by the school system.
2. In all four sites, where incentives were offered to teachers, it is desirable to measure the value of the time and materials which these teachers donated for student use, as the result of the monetary incentives.
3. In two sites, where incentives were offered to parents, it is desirable to measure the value of the time and materials which these parents donated for their children's use, as the result of the monetary incentives.

In each of these areas, comparisons between the control and experimental student groups provide insight into the effect of monetary incentives on resource expenditure patterns. It should be noted that the costs associated with each of these areas represent the resources consumed by sixth grade students at each of the sites. The sixth grade was mutually selected by ETS, USOE, and the local project directors, as the focal point for the cost analysis study.

The limitations of the cost analysis task should be clearly delineated. The size of the samples were quite small and, as a consequence, may give less than firm readings as to the economic impact of the data collected. Of necessity, much of the data on classroom costs was gathered during the teacher interview process. This means that it was necessary to rely totally on statements of teachers regarding investment of time and

other resources as the result of the incentives project. It is believed that teachers in the experimental schools may have a "psychological incentive" to underreport the efforts they donated as the result of being offered a performance based monetary incentive. In fact, many of the teacher replies demonstrate indignance at the suggestion that they would work harder because of being offered a reward. This belief in the questionable validity of the data is confirmed to some degree by the subjective reporting of both project monitors and project directors. Reports from teachers have been contradicted by the first-hand knowledge of the project monitors. However, the evaluation resources were not available to conduct the intricate and disrupting consistency checks which would have been needed to insure complete, or nearly complete, validity of data. Similar data validity problems plague the data on parent assistance to project pupils. As the result of these limitations, it is felt that of the three cost areas to be discussed (school, teachers, parents), only those costs dealing with the educational resources provided by the school system will have consistently high validity. Conclusions based upon data gathered in the other two areas should be very carefully considered.

School Resources

This section describes the resources each school system devoted to the control and experimental students in the incentives program. Table I presents the total, per-pupil costs for each of the programs involved in the project. The detailed calculations, which resulted in the total costs of Table I, are shown in Appendix A. The notes at the end of Appendix A specify the general assumptions and background computations which support the detailed cost calculations. Table II describes the way in which the resources provided each student were broken down among staff costs, facility costs, and materials costs.

TABLE I

PER PUPIL COSTS PER SCHOOL

Resources by Dollars

	Reading		Arithmetic	
Site	Control	Experimental	Control	Experimental
Cincinnati	$80.63	$69.12	$70.04	$69.30
Jacksonville	113.91	154.06	67.48	68.78
Oakland	92.42	120.01	86.30	96.16
San Antonio	71.87	98.57	73.40	49.48
AVERAGE	$89.70	$110.44	$74.30	$70.93

Note: The details for calculations of cost totals presented in this table are described in Appendix A.

TABLE II

PER PUPIL COSTS PER SCHOOL

Resources by Percent

Site	Reading		Arithmetic	
	Control	Experimental	Control	Experimental
Cincinnati				
Staff	83.5%	84.7%	81.9%	84.6%
Facilities	14.1	13.0	13.8	13.0
Materials	2.4	2.3	4.3	2.4
TOTAL	100.0%	100.0%	100.0%	100.0%
Jacksonville				
Staff	89.4%	86.5%	88.8%	85.5%
Facilities	9.6	12.3	9.4	12.1
Materials	1.0	1.2	1.8	2.4
TOTAL	100.0%	100.0%	100.0%	100.0%
Oakland				
Staff	89.1%	89.5%	90.9%	91.1%
Facilities	7.2	7.2	7.4	7.3
Materials	3.7	3.3	1.7	1.6
TOTAL	100.0%	100.0%	100.0%	100.0%
San Antonio				
Staft	86.6%	88.6%	87.0%	89.2%
Facilities	12.8	9.5	12.8	9.6
Materials	0.6	1.9	0.2	1.2
TOTAL	100.0%	100.0%	100.0%	100.0%

Cincinnati, Ohio

Reading: The control reading program had a somewhat higher per-pupil cost. This was almost totally the result of lower teacher costs in the experimental school. This, in turn, was caused by slightly larger classes in the experimental program.

Arithmetic: The control and experimental arithmetic programs had nearly equal per pupil costs. Slightly higher teacher salaries in the experimental program were off-set by larger experimental class sizes. The control students had considerably more dollars allocated to them for instructional materials.

Jacksonville, Florida

Reading: Higher teacher salaries and smaller class sizes in the experimental program combine to give a higher per-pupil staff expenditure for the experimental students. The experimental students also had more time in reading, larger classrooms, more audiovisual equipment, and more instructional materials. All of these factors combine to give a 35% higher per-pupil expenditure in the experimental school.

Arithmetic: Lower control teacher salaries are offset by smaller control class sizes to give approximately equal staff costs for both control and experimental classes. Larger experimental classrooms and more experimental audiovisual equipment, along with more experimental instructional materials, give the experimental students slightly higher per-pupil expenditures.

Oakland, California

Reading: Each experimental pupil had nearly a third more educational resources at his disposal than did each control pupil. This is almost entirely the result of smaller classes in the experimental school.

Arithmetic: Again each experimental pupil had more (about 10%) educational resources available to him than did each control pupil. This, too, was caused almost totally by smaller experimental class sizes.

San Antonio, Texas

Reading: The experimental classes had available to them much more (better than 35%) in the way of educational resources than the control classes. This was the result of higher average teacher salaries for the experimental teachers and smaller experimental class sizes. Also the data indicate that the experimental students had more instructional materials at their disposal.

Arithmetic: The control students had about 50% more educational resources available to them. This occurred despite higher experimental teacher salaries and smaller experimental classes. The difference in total cost was caused by the fact that the control pupils had, on the average, twice as much time devoted to the study of arithmetic than did the experimental pupils.

The results shown on Table II indicate that the general distribution of costs among staff, facilities, and materials is relatively uniform among all the sixth grade classes involved in the incentives program. Table I indicates that, on the average, experimental sixth grade students were provided with nearly 25% more educational resources in reading than were the control sixth grade students. This was largely the combined effect of a 10% higher average sixth grade teacher salary in the experimental schools plus a 7-1/2% longer average daily reading period for experimental sixth graders. In arithmetic, on the other hand, the total cost of resources for experimental sixth graders was 4.5% less than for the control students. This was predominantly the net effect of 16.5% shorter arithmetic periods for the experimental sixth grade students, which more than offset the 10% higher teacher salaries.

Teacher Resources

Data regarding the resources (time or materials) donated to program students are considered to be of such questionable validity, that any quantitative analysis would be entirely spurious. The danger of such an analysis being widely quoted has caused ETS, Inc. to eschew this quantitative cost analysis and to center its efforts on a more qualitative discussion of the nature of the teacher resource data.

Most of the sixth grade teachers involved in the incentives project reported making no additional effort as the result of the experiment. As noted earlier, this was contradicted by the opinion of some of the on-site project directors and monitors. To obtain data which could be treated with confidence would have required data verification procedures that likely would have been considered harassment by the teachers. In Oakland, which was the only site where complete teacher expenditure data were available there was an indication that experimental teachers donated nearly twice as much money for materials as the control teachers. However, this result was based on very small sample sizes and relied heavily on possibly self-serving statements by teachers. As such, the Oakland results are of only slightly less dubious value than data at other sites. Similar characteristics were noted regarding the amount of time donated by the teachers.

The effect of the self-serving nature of some teacher replies is far from clear. On the one hand, teachers may react to the incentives by adhering to the "party line" of teachers' organizations and attempting to show that incentives had no effect on them. In this case, they might understate their personal donations of time and money. On the other hand, some teachers prefer to overstate their donations in order to emphasize the contention that teachers are underpaid for the effort which they are called upon to perform. Considerations such as these lead to the conclusion that the teacher data is

of such quality that detailed analysis of it would only lead to erroneous conclusions.

Parent Resources

Incentives to parents were provided at two project sites, Oakland and San Antonio. The data concerning the resources donated by incentive program parents suffer many of the same drawbacks as the teacher data. The virtual impossibility of verifying the data (How does one check on how much time a parent spends helping his child at home?) and the subjective feeling of some of the interviewers (project monitors) lead to the conclusion that the data is quite unreliable.

As an example, in response to a question regarding the amount of money the parents spent on materials to help their children in reading and arithmetic, there was an almost uniform reply from parents saying they spent nothing. Yet, one mother and father claimed to have spent over a thousand dollars for an encyclopedia and other materials for their child. First, it is highly unlikely that all of the parents who claimed to have spent nothing in the way of educational materials for their children, in reality did not buy at least some miscellaneous materials. Second, it is improbable that the parents who spent more than $1,000 in materials for their child did so as the result of this incentives project; the maximum incentive reward possible is only $100 per child. An occasional data item, such as this $1,000 expenditure, would have devastating effects on the validity of a cost analysis in which it was included, even if all other included data items were considered reliable and valid. In short, neither of the two measures of parents' resources, time or materials, are considered to be represented by sufficiently sound data to warrant a comprehensive cost analysis. Indeed, such a detailed analysis would, at best, be misleading.

In specific reference to the interview question relating to the amount of money spent by the parents for materials to help their children in reading and arithmetic, 80% of the interviewed control parents reported no expenditures while the remaining 25% reported small (less than $15) expenditures. Seventy eight percent (78%) of the experimental parents reported no expenditures while the remaining parents indicated small expenditures (with the only exception being the $1,000 expenditure noted above). From data such as these, it would be foolhardy to attempt to draw conclusions regarding the impact of monetary incentives on parental spending patterns.

Similar difficulty exists in interpreting the parent data on the imputed value of the time parents spend helping their children in reading and arithmetic. At the Oakland schools, in particular, the data makes analysis futile, as nearly 80% of the interviewed parents reported spending no time helping their children. In San Antonio, however, the parental responses provided slightly more basis for analysis. All interviewed parents reported helping their project students for some time each day. The data indicates that the control parents spend, on the average about 2 hours and 15 minutes helping their children in reading, and about one and a half hours helping in arithmetic. The experimental parents spent, on the average, 45 minutes and 1 hour and fifteen minutes on reading and arithmetic assistance, respectively. This, of course, would indicate that the control parents spent more time helping their children than do the experimental parents. In an experiment with an appropriate control group, this phenomenon is quite unlikely. There are two possible explanations to this apparent paradox of human nature, both of which probably apply to some degree. First, the data may be unrepresentative. This is probably true, in some cases, since many of the answers given by parents were somewhat self-serving and since no viable way existed to verify parents claims of time

spent. Additionally, the sample included only parents of sixth grade students. The second possible explanation is that the control students and their parents were not, in fact, an ideal match (for purposes of comparison) for the experimental students. It is, of course, true that it is impossible to find two schools that match perfectly in terms of the sociological and economic makeup of their student populations. In fact, perfunctory data gathered on the average annual family income for the two student groups in San Antonio indicate that the families of the control students had a considerably higher income than the families of the experimental students. Table III summarized this income data for the two sites at which the parent information was collected. It is quite possible that the higher incomes for the control families at both sites, may prove to be

TABLE III

AVERAGE ANNUAL FAMILY INCOMES

Site	Control	Experimental
Oakland	$5,327	$5,013
San Antonio	$6,100	$4,900

representative of the most important factor affecting the achievement of the students. If James Coleman is to be believed, family demographics may override all other factors in determining student performance. This is important to note in light of the higher incomes in the control families (although similar data is not available for the other two sites). If the experimental results indicate that the experimental students do not show better performance than the control students, incentives may be subject to disparagement as being a useless device for helping disadvantaged children learn. It is quite possible that such an experimental outcome might be badly confounded by "inferior" demographic

conditions in the experimental families.

Summary

The nature of the resource contributions to the incentives project students (sixth grade) of each of the program's components can be summarized as follows:

School

In reading, higher experimental teacher salaries and longer experimental reading periods combined to give the experimental reading students almost 25% more educational resources than the control students. In arithmetic the higher experimental teacher salary was more than offset by shorter experimental arithmetic periods to show very slightly lower resources expenditures for the experimental students.

Teacher

Data representing teacher resource donation are based upon such a small sample size and are of such dubious reliability that conclusions regarding the economic reaction of teachers to the incentives project are impossible to draw.

Parent

Parent economic donations to children's educational resources are so confounded by external factors, that conclusions are difficult to draw. If one had to venture a conclusion, it would be that the incentives project had little or no effect on parents' economic contributions (time or materials) to their children. One key point which is brought out is the possibility that the control and experimental student groups are of such different demographic characteristics that all other effects could be overshadowed.

PART V: POLICY IMPLICATIONS

Introduction

The realities of policy formulation in education should preface any discussion of the policy implications of a controversial project and its results. Often difficult to detect, but seldom unfelt, the forces influencing the policy determination process in education are significant indeed.

Once determined, policy has to be implemented effectively if intent is to be carried out. While the executive implementation machinery seldom moves quickly and in an efficient manner, acceptance, adaptation, or adoption always presents problems. In the majority of instances, school districts are semi-autonomous, characterized by a tradition of running programs the way most suitable to them. Beyond the carrot of the federal dollar, few incentives for change, "greater efficiency," etc. exist. Moreover, in many cases the priority or value judgements of sponsors and users associated with the criteria for determining the success of an experiment on which new policies will be based are conflicting. (While sponsors of the experiment consider student achievement a major decision criterion, local decision makers might consider costs, potential internal disruption, and/or political issues as more significant criteria.) Implementation directives must certainly take these and other similar factors into account.

Implications for Field Experimentation

While many of the issues and problems associated with field experimentation have been discussed generally, the project offered an opportunity to identify and define some of them more clearly.

First, the use of classical "experimental" vs. "control" design is open to question

when controversial techniques are tested. In any such project, many groups interested in maintaining the status quo perceive a threat. When they are part of or can influence a "control" group, it ceases to be such. During the initiation of the project a competitive atmosphere, expressed and/or actual, became apparent in control sites. While the "Hawthorne Effect" may have been at work in experimental groups, the John Henry effect [1] was certain y prevalent to varying degrees in control sites. As the "Steel Driving Machine" appeared in the form of "moral concern," threats of merit pay, etc., competition did occur. Depending upon the results achieved, one could legitimately argue that while the control group "competition" may have affected the integrity of the research design, the operational objectives of the experiment (i.e., to increase student performance) may have been fulfilled.

Second, while random selection, generally used in research designs, may be reliable for generalizing the results observed when the same techniques are applied, an implicit assumption is that it will be adopted. This assumption does not take into account the politics of innovation in education. Inventive techniques of a controversial nature generally succeed initially only in those environments already conducive to innovation; adaptation and adoption occur elsewhere as the dynamics of change erode the barriers.

Third, depending on the radical nature of the techniques being tested, the imposition by the sponsoring agency of experimental design upon a local education agency surfaces moral, legal, and other issues. These problems described extensively in the Evaluation Report, are summarized below.

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[1] Gary Saretsky, "The OEO P.C. Experiment and the John Henry Effect," Phi Delta Kappan, (May, 1972), pp. 579-581.

Delivery Systems

Due to restrictive legislation regarding use of funds, the agency itself may be constrained in implementing its own design. For example, the question was raised initially whether ESEA Title III, Section 306 funds could be paid to a teacher and/or parent for doing a job which which was morally expected of them. To a limited extent the same question was raised at the LEA level as it has been raised in other incentive/performance contract projects. The desire to gather relevant information from parents is constrained somewhat by federal rules and regulations regarding "violation of privacy," justifiably or not.

The requirement for state approval or acknowledgement of this project further complicated the timing and perhaps the credibility of the project for a period of time. If experimentation is to be conducted effectively, the sponsoring agency must be empowered to implement the project in a timely and efficient manner.

Legal Problems

As a result of their prevalence and proliferation, many obsolete and archaic statutes and regulations provide the opportunity for the creation of legal problems when threatened vested interest groups are able to convert political influence into legal sanctions. While it is possible to seek and often to obtain waivers for purposes of limited field experimentation, if techniques which engender legal sanctions are successful, the probability of wide scale adoption will be limited and certainly frustrating. For example, in this project a question was raised whether or not a school district was empowered to actually pay parents on the basis of their child's academic performance. Moreover, participation in a federally sponsored program often provides an encouragement for personnel to

challenge local regulations. To illustrate, a participating teacher in one site sought an injunction to prevent the school district from relieving her of her teaching responsibilities (under a local regulation regarding pregnancy) on the basis that such action would prevent her participation in the project. When another teacher was officially reprimanded for the misconduct in his classroom, he argued that his actions were justified by the project's directive "to do whatever a teacher feels would work best to improve the performance of his class." In another instance, teachers requested an undue amount of materials for students and brought additional pressures on the principal such that he would request a transfer, which he did. While the results of a field experiment are often "interesting," so are the ways by which participants use the experiment as a "whipping boy" to vent political or personal interests, all of which make it difficult to predict the nature and extent of the "legal" problems which will arise.

Decision Criteria Conflict

The criteria for assessing the effectiveness of a technique by the local education agency (LEA) and by the federal sponsor involved in field experimentation are often conflicting. The LEA may wish to participate for reasons ranging from the mere availability of federal funds to serious and genuine interest in testing the technique. Most importantly, the criteria for deciding whether or not an experimental technique works may differ. Local administrators may view the major objective of their institution as "school keeping" or custodial, while federal sponsors view student learning as the primary objective of the school district. As a result, the "recommendations" of a federally reported project often differ from the actions taken by the LEA, which are often based upon socio-political and economic factors. Similarly, measurement instru-

ments need mutual acceptance. For example, in this Incentives Project, teachers and school administrators at several sites not only had disdain for, but objected to the use of standardized tests as the sole basis of determining payment. Several black teachers felt it was part of a "conspiracy" since standardized tests "do not measure accurately the performance of minority group students." If field experimentation is to be relevant to potential users, it would appear that the criteria and measurement instruments at the local level have to be in the design of the experiment if the techniques are to be even considered for adoption.

Moral and Ethical Issues

While many field experiments such as this one attempt to determine the degree to which ethics are an important variable (e.g., paying teachers for the performance of students), a more subtle question surrounds the issue of the ethics or morality of the conduct of the experiment itself. A major function of field experimentation is to gather information, which is often sensitive, (e.g., the performance of students, teachers, and others). While mutually acceptable disclosure agreements are a pre-requisite for project participation, those gathering and evaluating such data must be alert constantly to sensitive data to protect the interests of certain participants, yet insure the integrity of the analysis and report. The extent of the "problem" is largely a function of the regulations of the participating school districts and the relationships of their administrators to teaching personnel and the community. As with any "internalized bureaucracy," where suspicion generates disruption, if not chaos, those privy to knowing "what's really on" have an awesome responsibility. Given the closeness by which information is held within schools, knowledge that "outsiders" know, itself, can be disruptive for internal operations.

Implications of the Results

The policy implications of this field experiment are mostly related to the results achieved by students and nature of the change process which occurred. If the results are significant and the adverse side effects minimal, policy implications and issues surface at all governmental levels, as discussed below.

Federal

The most obvious policy implication concerns the offer of incentives in ESEA Title I programs. Legislative as well as administrative changes (e.g., guidelines) would be required to offer incentives to students, teachers and/or parents based upon the achievement of students. Related proposals have been made in the past; for example, the "bonus pay" or "combat pay" amendment to ESEA Title I, proposed by Congresswoman Edith Greene, would provide bonuses to teachers who would be willing to transfer to inner city schools where student achievement is significantly below national norms -- a portion of the bonus would be based upon the performance of the teachers as well as the students. The recently proposed "bonus" bill by Senators Mondale and Stevenson would provide money in addition to existing ESEA Title I allocations to school districts for each student who achieves a unit of improvement in reading and math. This proposal is similar to and based partially upon the Michigan State Department of Education Accountability Project where 69 school districts will receive $200 for each target student who achieves at least .75 grade level gain in math and reading. The policy changes implicit in radical modifications in the use of ESEA Title I funds, however, are significant and should be approached with caution.

First, the amount of incentives to offer teachers and parents to remove basic skill

deficiencies is not clear. The maximum incentives amounts of $1200 for teachers and $100 per child for parents used in this project do not necessarily reflect the "revealed preferences" of the individual teachers (e.g., contracts were not negotiated individually). These amounts are relatively small compared to the maximum bonuses in two other teacher incentives projects -- the Bristol, Virginia project ($2,100 for reading only) and the Dade County, Florida project ($5000 for math and reading). Even though final determination of incentive bonus amounts would result from the legislative process, study and effort must be directed toward determining both the preferences of participants and realistic appraisals of the level of effort correlated to student growth above normally expected gains. A study of all existing incentive programs would probably indicate that certain teachers did not increase their level of effort, either quantitatively or qualitatively, because the incentives were too small while in other cases, bonus and formulae for determining payment were perceived as unrealistic even if the teachers exerted the greatest level of effort humanly possible.

Second, the use of existing measurement instruments (especially standardized tests) is limited and questionable as a means for determining achievement and subsequent incentive payments. Moreover, when results on such tests are improperly used (e.g., payment on individual student scores), the problem is compounded. Criterion tests and mastery of behavioral objectives, increasingly used to determine payment in incentives projects, are not always useful for making inter-project comparisons, are difficult to communicate to community groups and parents, and are costly to develop, administer, and certify. Moreover, by prescribing specific criterion tests and banks of objectives, one implicitly narrows the range of curriculae which could eventually lead to accusations of federally prescribed and standardized curriculae.

And third, the administrative, legal, and other mechanical problems of implementing the modified ESEA Title I program are great. The most critical of these is related to quality assurances -- monitoring of test administration, program operations, and payment certification.

A second major policy implication is related to the use of incentive contracts as a vehicle for experimentation in other areas. Incentive contracting techniques do provide for a low risk, low cost means for experimentation. If the experiment fails (i.e., the students do not gain the specified amounts of achievement) then the contractor, teacher, or parent does not receive payment. If the experiment is successful, payment is made. The risk of the experiment is shared between the sponsoring agency and the participants, or the entire risk is passed on to the participants. At the first blush, the arrangement looks attractive; however, added to the problems described are more subtle ones which merit consideration here.

In most federally sponsored experiments in education, it is important to discover not only those techniques which work, and why, but also those which failed and how. But there is an ethical consideration to be made in requiring the participant to share the risk of failure with the sponsor. The sponsor will gain his objective of additional information in any case, but the participant (teacher) gains nothing in the case of failure and, indeed, has much to lose.

The cost of ensuring quality control over such an experiment is significant. Services required might include, among others, management assistance, testing and analysis, and education program audits. While such services might be necessary in any field experiment, the levels of effort would be greater in any experiment utilizing incentives as a vehicle for experimentation due to the nature of contingencies involved.

Without major changes in enabling legislation, the mechanics of implementing a project using incentive techniques as a vehicle for experimentation are both time consuming and tedious. Increased levels of effort by officials who provide administrative and other support to the designated project officer can be expected. For example, legal council representatives will spend more time reviewing incentive contractual agreements than traditional grant award documents. Contract officers will require a greater degree of specificity, and the government Accounting Office officials will initiate greater demands for documents for review and analysis purposes than under traditional projects of a similar controversial nature.

Policy implications and issues at the federal level will arise, as some already have, when the offer of incentives to students, teachers, and/or parents is incorporated into any funding pattern or grant management scheme. Further study and analysis can provide much needed insight for resolving the economic (i.e., amount of incentives to offer), mechanical (project implementation) and related problems and issues. To the extent, however, that aspects of the above problems are not resolved, they will tend to perpetuate and exaggerate the political, ethical, and legal ramifications of such a radical approach.

State and Local

The implications of this project for state and local education agency policies are difficult to predict. If results of the project are educationally significant (to LEA personnel) and side effects are minimal, LEA officials will analyze studies and reports on projects using incentives for possible adoption. Even if the achievement gains are not that successful, some may be equally interested in the concept as it meets "non-educational" (political, social, and economic) criteria used extensively in deciding

matters at their respective levels.

First, several SEA's and a large number of LEA's, experimenting with new techniques for the sake of innovation, argue that constant experimentation perpetuates a Hawthorne effect throughout the system, which they feel is desirable. Others will be genuinely interested in experimenting with the techniques in their respective environments to determine whether or not it will work for them. And others innovate for personal self-aggrandizement, creating stepping stones to higher rungs on the ladder of professional "growth" and status.

Second, incentive contract techniques have the basic tenets of accountability (defined as a participatory management process whereby objectives and criteria are mutually determined and programmatic decision making is delegated to the lowest operating level, the classroom teacher, who is rewarded based upon the performance of the students) and "professional self-governance," discussed widely as a major new thrust by national, state, and local teacher groups. A number of LEA's and their respective teacher groups can be expected to merge the professional and technical aspects of both as a means to improve overall effectiveness and efficiency. Others, however, will use incentive techniques as a vehicle for "passing the buck," or as a "whipping boy" to promote the professional groups' bargaining strength.

Third, incentive techniques could become the touchstone for new personnel policies of LEA's in the following ways: (a) as a vehicle for introducing merit pay or "pay based on productivity," (b) as a means for hiring younger and less "qualified" teachers thus eroding tenure, and (c) as a trial balloon for introducing other, less threatening, performance based evaluations of teachers.

Incentive Model Variations

As a result of the different perceptions of incentive techniques, the intentions of individuals and groups, and the "search" by many for the panacea in education, there is an extensive variation in the incentives models which could be implemented. However, there do exist several generic models which generate specific implications and issues.

Model 1: Generated by Modifications of ESEA Title I

If ESEA Title I Guidelines were amended or changed to prescribe or encourage the offer of incentives to parents or teachers based on student achievement, SEA guidelines would have to reflect such changes. If federal policy changes allowed the SEA some discretion regarding the determination of priorities (e.g., math and reading vs. social sciences, or elementary vs. middle schools, etc.), then certain constraints and the amount of funds to be used for incentives would also vary. The major issues related to this incentive model are as follows:

(a) Standardization of guidelines must be announced in the Federal Register over a long enough period of time to allow SEA's and LEA's the flexibility and start-up time for instructional program planning and development.

(b) Assurances of availability of funds over an extended period of time will be required because of LEA's past experiences with the appropriations process.

(c) The federal capability and organizational structure to insure quality control over LEA participation in the project must be strengthened

(d) Verification and audit of testing and other procedures used and the certification of results must occur.

(e) State/local political problems related to local control issues need to be minimized

if not resolved prior to any implementations.

Model 2: SEA Initiated Incentive Projects

Certain SEA's may wish to initiate legislative action and request state appropriations to implement incentive relationships with LEA's. To illustrate, concurrent with this experiment, the Michigan SEA, using $23 million of state appropriated funds, has entered into incentive arrangements with 69 school districts. The target population consists of the students who fall below the 16th percentile in math and reading scores based on statewide testing results. LEA's are provided a maximum of $200 for each student who achieves specific performance objectives prescribed at the initiation of the program or approximately .75 grade level gain in math and reading. During the next two years, the LEA will receive only a portion of the maximum payments (hence, incurring penalties), if students don't achieve the prescribed levels of performance. The unique aspect of this model is that LEA's do not have to spend the entire $200 to be reimbursed and, therefore, have an opportunity to "earn money" for the general fund -- an incentive to search the marketplace for the most cost effective learning system. Thus, school districts are rewarded for efficiency. Yet, it also provides an incentive for the LEA to put itself out of the "compensatory education" business since the target population is reduced as students achieve the prescribed levels; or if students do not achieve the specified performance levels, then state incentive funds are reduced creating further financial crises.

Aside from many of the issues described under Model 1, several additional ones are relevant to this model:

(a) LEA's are encouraged to concentrate only on math and reading skill development,

perhaps at the expense of other courses of instruction.

(b) Standardized tests and criterion referenced banks of performance objectives are selected and administered by the LEA's thus quite possibly reducing the reliability and validity of results.

(c) The implementation of a project which, if successful, provides little information about the reasons why, which is necessary for purposes of replication.

(d) The failure to recognize the varying capabilities of LEA's to raise student performance to prescribed levels, an income distribution and "equity" problem.

(e) The issue of "local control", surfaces since relationships between LEA and state legislators would be more intimate than under Model 1.

(f) The probability that few LEA's will be able to continue the program after the state incentive funds are depleted, because of high operating costs, is another consideration to be made.

Model 3: LEA Initiated Incentive Projects

Local educational agencies will necessarily modify tenets of this Incentives Model for their own purposes. As one of the local superintendents stated, "there are so many implications it almost boggles the mind to think about them... that communities should get together and offer incentives for the schools ... the kind of incentives that make sense to the citizens." The incentives model could be used by the LEA to assist in developing schools that are responsive to their own specific communities. Hence, the incentives criteria would be a stimulus for change in those schools which heretofore have not been responsive to the parents' needs.

Another adaptation of the incentives model for the LEA would be in the area of

resource reallocation and "profit sharing." If the faculty could demonstrate an increase in productivity, and, at the same time, realize cost savings to the district, then the amount of savings could be reallocated to the faculty as a reward. Hence, school faculties would be stimulated to increase their efforts, as measured by some performance criteria, in a cost effective manner while minimizing the ethical issue of "merit pay." In this way, the concept of decentralization and community based schools would be reinforced.

The specific nature of the Incentives Project at the LEA level would be determined by: (a) federal or state guidelines, requirements, and constraints, (b) political, social, and economic conditions at the local LEA level, and (c) results of incentives projects. The variations of the incentives projects will determine the nature and extent of issues raised which can be classified as ethical, legal, and political.

Ethical Issues

Based upon observation in this and other similar projects, ethical questions regarding the offer of incentives for parents and teachers are most likely to occur in the following situations and programs:

(a) In school districts where unionization is not extensive. In heavily unionized districts, ethical issues will be voiced but only as a whipping boy to disguise the major threats of merit pay, loss of tenure, etc.

(b) In small to medium sized school districts in the south and southwest where conservatism and populism prevail.

(c) In schools having self-contained classrooms where only one teacher is directly responsible for the performance of his students.

(d) In situations where there exists no monetary risk for teachers if students fail to perform and where teachers are not officially required to provide any additional services such as report writing, longer planning periods, etc. (i.e., when the incentive is perceived as a bribe rather than a payment for additional work as well as results).

(e) In schools where teachers are generally older, are relatively secure financially, and to whom more money is not a significant incentive.

Legal-Political Issues

Legal problems usually arise when controversial programs appear to be successful thus threatening the status quo and vested interest groups. Legal issues surrounding the use of incentives are most likely to arise in the following situations:

(a) Where individual teachers are given a greater decision making authority regarding program design features such as the selection of curriculum, class size, use of aides in lieu of certified teachers, etc.

(b)In situations where individual teachers and/or administrators participating in the incentives project come to use it as a "whipping boy" to air their grievances and justify their actions.

(c) In situations where the school district is unionized and has a heavily organized bureaucracy from the administration down to maintenance personnel (i.e., where red tape is particularly thick).

(d) In schools where principals lack the skill to lead their faculties firmly or where they are insecure in their positions.

APPENDIX A

CONSUMPTION OF SCHOOL SYSTEM RESOURCES

APPENDIX A

CONSUMPTION OF SCHOOL SYSTEM RESOURCES

This appendix contains the detailed analysis worksheets showing the calculations for the per-pupil costs of school resources for both control and experimental schools in the incentives project. There are three major cost categories included in the analyses--staff, facilities, and materials. The staff category includes only the costs of the teacher's salary and accompanying fringe benefits. The facilities category includes the costs of providing the classroom itself plus the costs of audiovisual equipment available to the students. The materials category includes the costs of books and software available to the students.

Each analysis worksheet indicates the total program cost of resources for an average sixth-grade class with the specified number of students. The next column to the right indicates the average cost of resources for each student in that class. Included at the end of the analysis worksheets is a list of notes which document many of the worksheet computations. These notes are referred to in the far right column of each analysis worksheet.

SITE: CINCINNATI, OHIO PROGRAM: Control

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (27 1/3 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$10,130			[1]
Estimated Fringes	+ 881.31			[2]
	$11,011.31			
Reading Time Percent	x 16.72 %			[3]
TOTAL STAFF COSTS		$1,841.09	$67.37	
II. FACILITIES				
A. Classroom - Area	969 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,879.86			
Reading Time Percent	x 16.07 %			[5]
TOTAL		$ 302.09	$11.05	
B. Audiovisual Equipment - Inventory	$ 5,223			[7]
Reading Time Percent	x 16.07 %			[5]
	$ 839.34			
Estimated Useful Life	÷ 5 years			[8]
	$ 167.87			
Class/School Ratio	x .049			[6]
TOTAL		$ 8.23	$ .30	
TOTAL FACILITIES COSTS		$ 310.32	$11.35	
III. MATERIALS - Inventory	$ 470.56			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 156.85			
Class/Program Ratio	x .333			[11]
TOTAL MATERIALS COSTS		$ 52.28	$ 1.91	
TOTAL PROGRAM COST		$2,203.69	$80.63	

SITE: CINCINNATI, OHIO

PROGRAM: Experimental

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (30 3/4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$11,310.67			[1]
Estimated Fringes	+ 984.03			[2]
	$12,294.70			
Reading Time Percent	x 14.64 %			[3]
TOTAL STAFF COSTS		$1,799.94	$58.53	
II. FACILITIES				
A. Classroom - Area	982 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,905.08			
Reading Time Percent	x 14.07 %			[5]
TOTAL		$ 268.04	$ 8.72	
B. Audiovisual Equipment - Inventory	$ 6,403			[7]
Reading Time Percent	x 14.07 %			[5]
	$ 850.25			
Estimated Useful Life	÷ 5 years			[8]
	$ 170.05			
Class/School Ratio	x .045			[6]
TOTAL		$ 7.65	$ .25	
TOTAL FACILITIES COSTS		$ 275.69	$ 8.97	
III. MATERIALS - Inventory	$ 599.32			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 199.77			
Class/Program Ratio	x .250			[11]
TOTAL MATERIALS COSTS		$ 49.94	$ 1.62	
TOTAL PROGRAM COST		$2,125.57	$69.12	

SITE: CINCINNATI, OHIO

PROGRAM: Control

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (27 1/3 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$10,130			[1]
Estimated Fringes	+ 881.31			[2]
	$11,011.31			
Math Time Percent	x 14.24 %			[3]
TOTAL STAFF COSTS		$1,568.01	$57.37	
II. FACILITIES				
A. Classroom - Area	969 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,879.86			
Math Time Percent	x 13.69 %			[5]
TOTAL		$ 257.35	$ 9.42	
B. Audiovisual Equipment - Inventory	$ 5,223			[7]
Math Time Percent	x 13.69 %			[5]
	$ 715.03			
Estimated Useful Life	÷ 5 years			[8]
	$ 143.01			
Class/School Ratio	x .049			[6]
TOTAL		$ 7.01	$ .27	
TOTAL FACILITIES COSTS		$ 264.36	$ 9.69	
III. MATERIALS - Inventory	$ 733.41			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 244.47			
Class/Program Ratio	x .333			[11]
TOTAL MATERIALS COSTS		$ 81.49	$ 2.98	
TOTAL PROGRAM COST		$1,913.86	$70.04	

SITE: CINCINNATI, OHIO

PROGRAM: Experimental

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (30 3/4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$11,310.67			[1]
Estimated Fringes	+ 984.03			[2]
	$12,294.70			
Math Time Percent	x 14.67 %			[3]
TOTAL STAFF COSTS		$1,803.53	$58.65	
II. FACILITIES				
A. Classroom - Area	982 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,905.08			
Math Time Percent	x 14.10 %			[5]
TOTAL		$ 268.62	$ 8.74	
B. Audiovisual Equipment - Inventory	$ 6,043			[7]
Math Time Percent	x 14.10 %			[5]
	$ 852.06			
Estimated Useful Life	÷ 5 years			[8]
	$ 170.41			
Class/School Ratio	x .045			[6]
TOTAL		$ 7.67	$ .25	
TOTAL FACILITIES COSTS		$ 276.29	$ 8.99	
III. MATERIALS - Inventory	$ 610.81			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 203.60			
Class/Program Ratio	x .250			[11]
TOTAL MATERIALS COSTS		$ 50.90	$ 1.66	
TOTAL PROGRAM COST		$2,130.72	$69.30	

SITE: JACKSONVILLE, FLORIDA PROGRAM: Control

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (30 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 8,433.33			[1]
Estimated Fringes	+ 733.70			[2]
	$ 9,167.03			
Reading Time Percent	x 33.33 %			[3]
TOTAL STAFF COSTS		$3,055.37	$101.85	
II. FACILITIES				
A. Classroom - Area	780 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,513.20			
Reading Time Percent	x 20.50 %			[5]
TOTAL		$ 310.21	$ 10.34	
B. Audiovisual Equipment - Inventory	$10,251			[7]
Reading Time Percent	x 20.50 %			[5]
	$ 2,101.46			
Estimated Useful Life	÷ 5 years			[8]
	$ 420.29			
Class/School Ratio	x .039			[6]
TOTAL		$ 16.39	$ .55	
TOTAL FACILITIES COSTS		$ 326.60	$ 10.89	
III. MATERIALS - Inventory	$ 630.60			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 210.20			
Class/Program Ratio	x .167			[11]
TOTAL MATERIALS COSTS		$ 35.03	$ 1.17	
TOTAL PROGRAM COST		$ 3,417.00	$ 113.91	

SITE: JACKSONVILLE, FLORIDA PROGRAM: Experimental

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (27.2 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 9,525			[1]
Estimated Fringes	+ 828.68			[2]
	$10,353.68			
Reading Time Percent	x 35.00 %			[3]
TOTAL STAFF COSTS		$ 3,623.79	$ 133.23	
II. FACILITIES				
A. Classroom - Area	945 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,833.30			
Reading Time Percent	x 26.92 %			[5]
TOTAL		$ 493.52	$ 18.14	
B. Audiovisual Equipment - Inventory	$12,860			[7]
Reading Time Percent	x 26.92 %			[5]
	$ 3,461.91			
Estimated Useful Life	÷ 5 years			[8]
	$ 692.38			
Class/School Ratio	x .032			[6]
TOTAL		$ 22.16	$ .81	
TOTAL FACILITIES COSTS		$ 515.68	$ 18.95	
III. MATERIALS - Inventory	$ 766.50			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 255.50			
Class/Program Ratio	x .200			[11]
TOTAL MATERIALS COSTS		$ 51.10	$ 1.88	
TOTAL PROGRAM COST		$4,190.57	$154.06	

SITE: JACKSONVILLE, FLORIDA PROGRAM: Control

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (25 1/2 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 8,433.33			[1]
Estimated Fringes	+ 733.70			[2]
	$ 9,167.03			
Math Time Percent	x 16.67 %			[3]
TOTAL STAFF COSTS		$ 1,528.14	$ 59.93	
II. FACILITIES				
A. Classroom - Area	780 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,513.20			
Math Time Percent	x 10.26 %			[5]
TOTAL		$ 155.25	$ 6.09	
B. Audiovisual Equipment - Inventory	$10,251			[7]
Math Time Percent	x 10.26 %			[5]
	$ 1,051.75			
Estimated Useful Life	÷ 5 years			[8]
	$ 210.35			
Class/School Ratio	x .033			[6]
TOTAL		$ 6.94	$ .27	
TOTAL FACILITIES COSTS		$ 162.19	$ 6.36	
III. MATERIALS - Inventory	$ 548.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 182.67			
Class/Program Ratio	x .167			[11]
TOTAL MATERIALS COSTS		$ 30.44	$ 1.19	
TOTAL PROGRAM COST		$1,720.77	$ 67.43	

SITE: JACKSONVILLE, FLORIDA

PROGRAM: Experimental

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (26.4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 9,525			[1]
Estimated Fringes	+ 828.68			[2]
	$10,353.68			
Math Time Percent	x 15.00 %			[3]
TOTAL STAFF COSTS		$ 1,553.05	$ 58.83	
II. FACILITIES				
A. Classroom - Area	945 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,833.30			
Math Time Percent	x 11.53 %			[5]
TOTAL		$ 210.38	$ 7.97	
B. Audiovisual Equipment - Inventory	$12,860			[7]
Math Time Percent	x 11.53 %			[5]
	$ 1,482.76			
Estimated Useful Life	÷ 5 years			[8]
	$ 296.55			
Class/School Ratio	x .031			[6]
TOTAL		$ 9.19	$ .35	
TOTAL FACILITIES COSTS		$ 219.57	$ 8.32	
III. MATERIALS - Inventory	$ 644			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 214.67			
Class/Program Ratio	x .200			[11]
TOTAL MATERIALS COSTS		$ 42.93	$ 1.63	
TOTAL PROGRAM COST		$1,815.55	$ 68.78	

SITE: OAKLAND, CALIFORNIA PROGRAM: Control

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (29.4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 11,666.80			[1]
Estimated Fringes	+ 1,015.01			[2]
	$ 12,631.81			
Reading Time Percent	x 19.09 %			[3]
TOTAL STAFF COSTS		$ 2,420.96	$ 82.35	
II. FACILITIES				
A. Classroom - Area	600 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,164			
Reading Time Percent	x 16.15 %			[5]
TOTAL		$ 187.99	$ 6.39	
B. Audiovisual Equipment - Inventory	$ 7,001			[7]
Reading Time Percent	x 16.15 %			[5]
	$ 1,130.66			
Estimated Useful Life	÷ 5 years			[8]
	$ 226.13			
Class/School Ratio	x .039			[6]
TOTAL		$ 8.82	$ .30	
TOTAL FACILITIES COSTS		$ 196.81	$ 6.69	
III. MATERIALS - Inventory	$ 1,491.12			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 497.04			
Class/Program Ratio	x .200			[11]
TOTAL MATERIALS COSTS		$ 99.41	$ 3.38	
TOTAL PROGRAM COST		$ 2,717.18	$ 92.42	

SITE: OAKLAND, CALIFORNIA PROGRAM: Experimental

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (24 1/2 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$11,837.33			[1]
Estimated Fringes	+ 1,029.84			[2]
	$12,367.17			
Reading Time Percent	x 20.45 %			[3]
TOTAL STAFF COSTS		$ 2,631.34	$107.40	
II. FACILITIES				
A. Classroom - Area	600 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,164			
Reading Time Percent	x 17.30 %			[5]
TOTAL		$ 201.37	$ 8.22	
B. Audiovisual Equipment - Inventory	$ 6,972			[7]
Reading Time Percent	x 17.30 %			[5]
	$ 1,206.16			
Estimated Useful Life	÷ 5 years			[8]
	$ 241.23			
Class/School Ratio	x .044			[6]
TOTAL		$ 10.61	$ .43	
TOTAL FACILITIES COSTS		$ 211.98	$ 3.65	
III. MATERIALS - Inventory	$ 582.36			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 194.12			
Class/Program Ratio	x .500			[11]
TOTAL MATERIALS COSTS		$ 97.06	$ 3.96	
TOTAL PROGRAM COST		$ 2,940.38	$120.01	

SITE: OAKLAND, CALIFORNIA

PROGRAM: Control

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (29.4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$11,666.80			[1]
Estimated Fringes	+ 1,015.01			[2]
	$12,681.81			
Math Time Percent	x 18.18 %			[3]
TOTAL STAFF COSTS		$2,305.55	$78.42	
II. FACILITIES				
A. Classroom - Area	600 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,164			
Math Time Percent	x 15.38 %			[5]
TOTAL		$ 179.02	$ 6.09	
B. Audiovisual Equipment - Inventory	$ 7,001			[7]
Math Time Percent	x 15.38 %			[5]
	$ 1,076.75			
Estimated Useful Life	÷ 5 years			[8]
	$ 215.35			
Class/School Ratio	x .039			[6]
TOTAL		$ 8.40	$ .29	
TOTAL FACILITIES COSTS		$ 187.42	$ 6.38	
III. MATERIALS - Inventory	$ 660.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 220.00			
Class/Program Ratio	x .200			[11]
TOTAL MATERIALS COSTS		$ 44.00	$ 1.50	
TOTAL PROGRAM COST		$ 2,536.97	$ 86.30	

SITE: OAKLAND, CALIFORNIA

PROGRAM: Experimental

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (24 1/2 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$11,837.33			[1]
Estimated Fringes	+ 1,029.84			[2]
	$12,867.17			
Math Time Percent	x 16.67 %			[3]
TOTAL STAFF COSTS		$ 2,144.96	$ 87.55	
II. FACILITIES				
A. Classroom - Area	600 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,164			
Math Time Percent	x 14.10 %			[5]
TOTAL		$ 164.12	$ 6.70	
B. Audiovisual Equipment - Inventory	$ 6,972			[7]
Math Time Percent	x 14.10 %			[5]
	$ 983.05			
Estimated Useful Life	÷ 5 years			[8]
	$ 196.61			
Class/School Ratio	x .044			[6]
TOTAL		$ 8.65	$ .35	
TOTAL FACILITIES COSTS		$	$	
III. MATERIALS - Inventory	$ 230.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 76.67			
Class/Program Ratio	x .500			[11]
TOTAL MATERIALS COSTS		$ 38.33	$ 1.56	
TOTAL PROGRAM COST		$ 2,356.06	$ 96.16	

SITE: SAN ANTONIO, TEXAS PROGRAM: Control

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (30 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 6,953			[1]
Estimated Fringes	+ 605.35			[2]
	$ 7,563.35			
Reading Time Percent	x 24.68 %			[3]
TOTAL STAFF COSTS		$ 1,866.64	$ 62.22	
II. FACILITIES				
A. Classroom - Area	630 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,222.20			
Reading Time Percent	x 20.50 %			[5]
TOTAL		$ 250.55	$ 8.35	
B. Audiovisual Equipment - Inventory	$ 7,720			[7]
ReadingTime Percent	x 20.50 %			[5]
	$ 1,582.60			
Estimated Useful Life	÷ 5 years			[8]
	$ 316.52			
Class/School Ratio	x .079			[6]
TOTAL		$ 25.01	$ .83	
TOTAL FACILITIES COSTS		$ 275.56	$ 9.18	
III. MATERIALS - Inventory	$ 84.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 28.00			
Class/Program Ratio	x .500			[11]
TOTAL MATERIALS COSTS		$ 14.00	$ .47	
TOTAL PROGRAM COST		$2,156.20	$71.87	

SITE: SAN ANTONIO, TEXAS

PROGRAM: Experimental

SUBJECT: Reading

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (24 1/2 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 8,267.92			[1]
Estimated Fringes	+ 719.31			[2]
	$ 8,987.23			
Reading Time Percent	x 23.80 %			[3]
TOTAL STAFF COSTS		$ 2,138.96	$ 87.30	
II. FACILITIES				
A. Classroom - Area	540 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,047.60			
Reading Time Percent	x 20.50 %			[5]
TOTAL		$ 214.76	$ 8.77	
B. Audiovisual Equipment - Inventory	$ 7,536			[7]
Reading Time Percent	x 20.50 %			[5]
	$ 1,544.88			
Estimated Useful Life	÷ 5 years			[8]
	$ 308.98			
Class/School Ratio	x .051			[6]
TOTAL FACILITIES COSTS	TOTAL	$ 15.76	$ .64	
		$	$	
III. MATERIALS - Inventory	$ 546.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 182.00			
Class/Program Ratio	x .250			[11]
TOTAL MATERIALS COSTS		$ 45.50	$ 1.86	
TOTAL PROGRAM COST		$ 2,414.98	$ 98.57	

SITE: SAN ANTONIO, TEXAS PROGRAM: Control

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (29 1/4 students per class)	NOTE
I. STAFF - Teacher - Average Salary	$ 6,958			[1]
Estimated Fringes	+ 605.35			[2]
	$ 7,563.35			
Math Time Percent	x 24.68 %			[3]
TOTAL STAFF COSTS		$ 1,866.64	$ 63.82	
II. FACILITIES				
A. Classroom - Area	630 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,222.20			
Math Time Percent	x 20.50 %			[5]
TOTAL		$ 250.55	$ 8.57	
B. Audiovisual Equipment - Inventory	$ 7,720			[7]
Math Time Percent	x 20.50 %			[5]
	$ 1,582.60			
Estimated Useful Life	÷ 5 years			[8]
	$ 316.52			
Class/School Ratio	x .077			[6]
TOTAL		$ 24.37	$ .83	
TOTAL FACILITIES COSTS		$ 274.92	$ 9.40	
III. MATERIALS - Inventory	$ 62.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 20.67			
Class/Program Ratio	x .250			[11]
TOTAL MATERIALS COSTS		$ 5.17	$ .18	
TOTAL PROGRAM COST		$2,146.73	$73.40	

SITE: SAN ANTONIO, TEXAS PROGRAM: Experimental

SUBJECT: Arithmetic

COST CATEGORY		TOTAL PROGRAM COST	PER-PUPIL COST (24 1/4 students per class)	NOTE
I STAFF - Teacher - Average Salary	$ 8,267.92			[1]
Estimated Fringes	+ 719.31			[2]
	$ 8,987.23			
Math Time Percent	x 11.91 %			[3]
TOTAL STAFF COSTS		$ 1,070.38	$ 44.14	
II. FACILITIES				
A. Classroom - Area	540 sq.ft.			[1]
Estimated Annual Unit Cost	x $1.94/sq.ft.			[4]
	$ 1,047.60			
Math Time Percent	x 10.26 %			[5]
TOTAL		$ 107.48	$ 4.43	
B. Audiovisual Equipment - Inventory	$ 7,536			[7]
Math Time Percent	x 10.26 %			[5]
	$ 773.19			
Estimated Useful Life	÷ 5 years			[8]
	$ 154.64			
Class/School Ratio	x .051			[6]
TOTAL		$ 7.89	$ .33	
TOTAL FACILITIES COSTS		$ 115.37	$ 4.76	
III. MATERIALS - Inventory	$ 168.00			[9]
Estimated Useful Life	÷ 3 years			[10]
	$ 56.00			
Class/Program Ratio	x .250			[11]
TOTAL MATERIALS COSTS		$ 14.00	$ .58	
TOTAL PROGRAM COST		$1,199.75	$49.48	

NOTES: (1) Taken directly or calculated from Project Director Data Form

(2) Fringe benefit estimated at 8.7%

(3) Reading or Arithmetic Time Percent for the teacher represents the portion of the average teacher's salary which is attributable to the class under consideration. This is calculated as the length of the student period divided by the total amount of time that the teacher is in contact with students.

CINCINNATI:	Control	- Reading	1.045 hrs.	÷	6.25 hrs.	= 16.72%
		- Arithmetic	.890 hrs.	÷	6.25 hrs.	= 14.24%
	Experimental	- Reading	.915 hrs.	÷	6.25 hrs.	= 14.64%
		- Arithmetic	.917 hrs.	÷	6.25 hrs.	= 14.67%
JACKSONVILLE:	Control	- Reading	1.333 hrs.	÷	4.0 hrs.	= 33.33%
		- Arithmetic	.667 hrs.	÷	4.0 hrs.	= 16.67%
	Experimental	- Reading	1.750 hrs.	÷	5.0 hrs.	= 35.00%
		- Arithmetic	.750 hrs.	÷	5.0 hrs.	= 15.00%
OAKLAND:	Control	- Reading	1.050 hrs.	÷	5.5 hrs.	= 19.09%
		- Arithmetic	1.000 hrs.	÷	5.5 hrs.	= 18.18%
	Experimental	- Reading	1.125 hrs.	÷	5.5 hrs.	= 20.45%
		- Arithmetic	.917 hrs.	÷	5.5 hrs.	= 16.67%
SAN ANTONIO:	Control	- Reading	1.333 hrs.	÷	5.4 hrs.	= 24.68%
		- Arithmetic	1.333 hrs.	÷	5.4 hrs.	= 24.68%
	Experimental	- Reading	1.333 hrs.	÷	5.6 hrs.	= 23.80%
		- Arithmetic	.667 hrs.	÷	5.6 hrs.	= 11.91%

The times in these calculations are averages, weighted by number of students. They were obtained from teacher schedule/rosters and from Teacher Data Forms.

(4) Estimated annual cost per square foot of classroom area (including operating and maintenance costs, principal, interest, and other financing costs) is $1.94 per square foot each year.

(5) Reading or Arithmetic Time Percent for facilities represents the portion of the cost of each facility which is attributable to the class under consideration. This is calculated as the length of the student period divided by the total length of the school day (uniformly estimated at 6.5 hours).

CINCINNATI:

	Control	- Reading	1.045 hrs.	÷	6.5 hrs.	= 16.07%
		- Arithmetic	.890 hrs.	÷	6.5 hrs.	= 13.69%
	Experimental	- Reading	.915 hrs.	÷	6.5 hrs.	= 14.07%
		- Arithmetic	.917 hrs.	÷	6.5 hrs.	= 14.10%

JACKSONVILLE:

Control	- Reading	1.333 hrs. ÷ 6.5 hrs. = 20.50%
	- Arithmetic	.667 hrs. ÷ 6.5 hrs. = 10.26%
Experimental	- Reading	1.750 hrs. ÷ 6.5 hrs. = 26.92%
	- Arithmetic	.750 hrs. ÷ 6.5 hrs. = 11.53%

OAKLAND:

Control	- Reading	1.050 hrs. ÷ 6.5 hrs. = 16.15%
	- Arithmetic	1.000 hrs. ÷ 6.5 hrs. = 15.38%
Experimental	- Reading	1.125 hrs. ÷ 6.5 hrs. = 17.30%
	- Arithmetic	.917 hrs. ÷ 6.5 hrs. = 14.10%

SAN ANTONIO:

Control	- Reading	1.333 hrs. ÷ 6.5 hrs. = 20.50%
	- Arithmetic	1.333 hrs. ÷ 6.5 hrs. = 20.50%
Experimental	- Reading	1.333 hrs. ÷ 6.5 hrs. = 20.50%
	- Arithmetic	.667 hrs. ÷ 6.5 hrs. = 10.26%

These times are averages, weighted by number of students. They were obtained from teacher schedule/rosters and from Teacher Data Forms.

(6) Audiovisual Equipment Inventories are for the entire school. These values must be scaled down to represent an allocation for the average class. The appropriate ratios to accomplish this are as follows:

CINCINNATI:

Control	- Reading	27.33 ÷ 557 = .049
	- Arithmetic	27.33 ÷ 557 = .049
Experimental	- Reading	30.75 ÷ 690 = .045
	- Arithmetic	30.75 ÷ 690 = .045

JACKSONVILLE:

Control	- Reading	30.00 ÷ 764 = .039
	- Arithmetic	25.50 ÷ 764 = .033
erimental	- Reading	27.20 ÷ 862 = .032
	- Arithmetic	26.40 ÷ 862 = .031

OAKLAND:

Control	- Reading	29.40 ÷ 754 = .039
	- Arithmetic	29.40 ÷ 754 = .039
Experimental	- Reading	24.50 ÷ 558 = .044
	- Arithmetic	24.50 ÷ 558 = .044

SAN ANTONIO:

Control	- Reading	30.00 ÷ 378 = .079
	- Arithmetic	29.25 ÷ 378 = .077
Experimental	- Reading	24.50 ÷ 477 = .051
	- Arithmetic	24.25 ÷ 477 = .051

These ratios represent the average program class size (number of students) divided by the total enrollment of the school.

(7) Audiovisual Equipment Inventory supplied by Project Director.

(8) Audiovisual Equipment estimated to have a 5-year lifetime.

(9) Materials Inventory obtained from Teacher Data Forms.

(10) Instructional Materials estimated to have a 3-year lifetime.

(11) Instructional Materials Inventories are for all sixth grade incentives program classes. These values must be scaled down to represent an allocation for the average class. The appropriate ratios to accomplish this are as follows:

CINCINNATI:			
	Control	- Reading	27.33 ÷ 82 = .333
		- Arithmetic	27.33 ÷ 82 = .333
	Experimental	- Reading	30.75 ÷ 123 = .250
		- Arithmetic	30.75 ÷ 123 = .250
JACKSONVILLE:			
	Control	- Reading	30.00 ÷ 180 = .167
		- Arithmetic	25.50 ÷ 153 = .167
	Experimental	- Reading	27.20 ÷ 136 = .200
		- Arithmetic	26.40 ÷ 132 = .200
OAKLAND:			
	Control	- Reading	29.40 ÷ 147 = .200
		- Arithmetic	29.40 ÷ 147 = .200
	Experimental	- Reading	24.50 ÷ 49 = .500
		- Arithmetic	24.50 ÷ 49 = .500
SAN ANTONIO:			
	Control	- Reading	30.00 ÷ 60 = .500
		- Arithmetic	29.25 ÷ 117 = .250
	Experimental	- Reading	24.50 ÷ 98 = .250
		- Arithmetic	24.50 ÷ 97 = .250

These ratios represent the average program class size (number of students) divided by the total enrollment of the sixth grade incentives program classes.