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Evaluation of an Education Project in South Africa
under September 1982 contract by the Agency for
International Development with The Consulting
Group, Inc.

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I. Scope of Evaluation

1. To the extent possible, I carried out the scope of work specified in the document prepared by Development Associates, Inc. (1). (Numbers in parentheses refer to documents listed at the end of the report.)
Because I did not go to South Africa in April with the project team led by Dr. Ray San Giovanni, the report does not address questions in Development Associate's scope of work that would require visitation to South Africa project sites. The report, however, does consider questions and issues that are not included in their scope of work, but that may be of interest to AID.
2. One basis for my evaluation of the project was a series of interviews with Consulting Group, Inc. (CGI) project staff at their San Diego office. The interviews occurred on March 27, 28, and 29, during which time I was accompanied by two members of the project evaluation team, Dr. Ray San Giovanni and Dr. Jim Perry. I interviewed the following staff: Ken Majer, President of CGI and Principal Investigator for the project; Roger Scott, Vice-President of CGI and Instructional Systems Design Specialist; Earl Yates, Project Director; Doreen Milner, developer of Chemistry curriculum materials; _____, developer of Physics curriculum materials; Emily Wright, developer of English curriculum materials; Steve Tuthill and Paul Roudebush, developers of mathematics curriculum materials; and _____, administrative assistant. I also had the opportunity to be briefed by and to interview by conference call John Marcum, professor at the University of California at Santa Cruz.

3. Because I happened to be in Chicago the week following the San Diego site visit, I was able to interview in person Larry Hedges, professor at the University of Chicago, who is Senior Advisor to the project and its Training Program Coordinator.
4. While at the San Diego offices of CGI, I inspected many of the project curriculum materials and project documents. I was also able to take many of these materials and documents to my home office to use in preparing this report.
5. The project staff were cooperative in giving me all information, curriculum materials, and documents that I requested for my evaluation.

II. Evaluation of Project Objectives and Methods

A. Are the project objectives desirable?

1. The project has two main objectives. The primary objective is to provide South African black students with instruction so that they can pass the Joint Matriculation board (JMB) examination with a sufficiently high score to qualify for admission to a South African university. The contract states this objective explicitly: "The purpose of this project is to prepare black South African high school students, as well as those teachers who have not done so, to pass the Joint Matriculation Board (JMB) examination..." (1.1).

A secondary objective of the project is to transfer a particular instructional technology into the South African educational system. I will discuss each objective separately.

2. The JMB

2.0 One justification for focussing on the objective of preparing black students for the JMB is that various South African agencies have requested assistance in achieving this objective. One document (2, page 1) states that Consulting Group, Incorporated "was asked by the U.S. Government and black South African community leaders to help design a programme for students aspiring to pass the critical matriculation examinations."

I could not locate evidence that a formal needs assessment was conducted to demonstrate this need. Thus, we do not know the number and characteristics of community leaders requesting assistance in helping black students prepare for the JMB. An exception is a telex (3) from Bishop Desmond Tutu stating that "we would appreciate it immensely if this work is funded for completion."

2.1 Another justification for the objective of preparing black South African students for the JMB is that many of these students fail it. I could only locate the following statistics documenting the extent of the problem:

- a. "Only one in ten black students who wrote matric last year [1982] passed it well enough to earn university entrance" (4).
- b. "One-third of 1% of Black pupils are in matric compared with 5% of Whites" (5, page 24). I assume that "in matric" means "takes the JMB."

If I interpret these statistics correctly, they mean that very few black students pass the JMB, but also very few of them take it.

My impression from studying the JMB syllabus and exams is that they reflect an abstract, elite curriculum based on the British system of university-preparatory education. As a comparison, I would guess that only 5 to 10 percent of American high school students are in the kind of program that is geared to the requirements of the JMB. Similarly, it appears that only 5 percent of white South African students are in high school programs that prepare them for the JMB (5, page 24).

- 2.2 The CGI project assumes that if black students pass the JMB, they (a) will be admitted to the "white" universities, (b) will choose to attend those universities, and (c) will succeed academically there. I could locate no evidence in the documents available to me to support or refute these assumptions. My experience with other educational systems, however, leads me to conclude that high test scores on a university entrance examination are no guarantee of academic success and degree completion.
- 2.3 The project objective is to prepare black students for the JMB, Higher Grade. It is possible, however, for these students to take one of two other end-of-high school examinations: JMB, Lower Grade, or the National Senior Certification.

The Study Guides developed by CGI under a previous contract and the Concept Development worksheets being prepared by CGI under the current contract are apparently intended to prepare students

for the JMB, Higher Grade. The Urban Foundation's evaluation of the project (6) indicates that this objective might disadvantage some black students. Their report notes that "almost all black schools write the National Senior Certificate (NSC) examinations. Comparison of available examination papers revealed significant differences in the types of questions set in both examinations... Although the JMB examinations and syllabi probably come close to university requirements, preparation for the JMB might disadvantage students preparing for the NSC" (p. 10).

Another concern identified in the Urban Foundation's report is that the CGI materials do not distinguish between the different requirements of the Standard Grade (SG) and Higher Grade (HG) examinations. The report states, "This obviously places SG pupils at a disadvantage as the study guides [prepared under the previous contract] distinctly cover the HG syllabus" (p. 10).

These findings of the Urban Foundation evaluation suggest that the project could have the effect of helping black students who are preparing for the JMB, Higher Grade, but also of disadvantaging black students who are preparing for other end-of-high school examinations. I could not conduct an independent assessment of this problem because the necessary materials were not available to me. Even if the materials were available, the assessment would require a very time-consuming, difficult content analysis.

- 2.4 I was told that a passing score on the JMB is not a requirement for admission to VISTA, one of the new South African universities. If

this is true, the project objective would not be relevant to black students seeking admission to this university.

- 2.5 A recent article (7) in NETWORK, the newsletter of the University Preparation Programme, discussed "the rumoured phasing out of the JMB" (p.3). The rumour was given sufficient credence that a petition to retain the JMB was signed by representatives of various South African groups. If the JMB is phased out, it would have the effect of making the project objective obsolete.
- 2.6 The CDWs under development cover only 3 of the 8 curriculum areas tested by the JMB. Thus, it is possible for black students to benefit from these CDWs yet do poorly on the JMB because they are poorly prepared in the other 5 curriculum areas.
- 2.7 Conclusion. I conclude that the objective of preparing black South African students for the JMB is desirable, although the need is not well-documented. I also conclude that this objective is worth pursuing so long as one realizes that it is limited and shortterm in scope.

The objective is limited in that even under much improved educational conditions, only a small percentage of black (and white) students are likely to take the JMB. The objective is also limited in that it does not address the very serious deficiencies in the black South African educational infrastructure. The deficiencies are evidenced by the fact that, at least until recently, just one dollar has been spent on a black student's education for every ten dollars spent on a white student's education.

The objective is shortterm in that even if black students pass the JMB, there is some question about whether these students will be able to attend universities, do well there, and do well in post-university life. It is also shortterm in that there seems to be some question about how long the JMB will remain in existence.

I must note at this point that I am only referring to one intended objective of the project. The project may be having desirable side-effects, such as strengthening the infrastructure of South African black education. These side-effects may well be more important than the intended objective. I shall discuss them at a subsequent point in this report.

I am concerned about the possibility that the CGI materials could mislead students preparing for end-of-high school examinations other than the JMB, Higher Grade. The project staff should assess the extent of the problem and then take appropriate action.

3. Transfer of Technology

- 3.1 The materials and methods being developed by CGI involve an instructional technology called the "Keller Plan" or "Personalized System of Instruction." When the project evaluation team met with the CGI staff in late March, we spent some time discussing the issues and problems of transferring this technology to the South African situation. ^{Based} ~~Although~~ on these discussions, it appears that a secondary objective of the project is to promote transfer of Keller Plan technology to the South African } education system. This

objective is also implied by a statement in the proposal for the project (9): "The philosophy of the project as an 'in-country' development effort includes ownership and eventual program administration by black South Africans with start-up development and training by the American Team" (9, see Executive Summary).

- 3.2 I wish to draw a distinction between implementation and transfer. Implementation involves whether the particular materials and procedures being developed by CGI are being used as intended. (I discuss this issue of implementation in other sections of the project, especially Section VI C.) Transfer involves whether the introduction of these particular materials and procedures leads to the development and use of new materials and procedures in the recipient country. Thus, transfer involves the infusion of new ideas into a country; these ideas can be used by indigenous persons to develop their own materials and procedures.
- 3.3 I find much evidence that this project will achieve its secondary objective of promoting the transfer of Keller Plan technology into South African education. First, this instructional technology appears relatively culture-free. It was originally developed in Brazil, spread to the United States, and is now used in many countries worldwide. Variants of the Keller Plan (for example, mastery learning and audio-tutorial instruction) have enjoyed similar success.
- 3.4 The major reason for the widespread use of the Keller Plan and its variants is their demonstrated effectiveness in improving students'

academic achievement. [Document].

- 3.5 The study guides developed in the first CGI-AID contract involve Keller Plan technology. The Urban Foundation evaluated their use in a disadvantageous setting, yet found that they "were welcomed by teachers and received enthusiastically" (8, page 24). Also, CGI has received requests from South African groups for printing the study guides. I think that the Concept Development Worksheets will be received as enthusiastically and will prompt the development of other curriculum materials employing the same instructional technology.
- 3.6 The Study Guides and Concept Development worksheets are intended for use in the University Preparation Programme, which is a "student development and teacher upgrade project" for black South Africans administered in non-formal instructional settings by non-governmental agencies. Given the power of the Keller Plan technology, I expect that the CDWs themselves and the technology on which they are based to spread to other educational contexts -- kindergarten through university, distance education programs, professional preparation programs. My reading of the literature on the Keller Plan indicates that its greatest use in the United States is in post-secondary education, especially in scientific and technical programs of study.
- 3.7 The amended contract between CGI and AID calls for CGI staff to work closely with the South African Council for Higher Education (SACHED) to develop many of the Concept Development Worksheets.

This joint development effort should result in increased capacity of South African educators to use Keller Plan technology for new applications in their country.

- 3.8 The Urban Foundation evaluation (8) found a discrepancy between the methodology typically used in formal classroom instruction (teacher-centered groupwork) and Keller Plan instructional methodology (student-centered, tutorial work). This discrepancy should not pose a serious problem. With appropriate modification, Keller Plan materials (such as the Study Guides and Concept Development Worksheets) should be usable with a variety of instructional methodologies. Conversely, Keller Plan instructional methods should be usable with a variety of curriculum materials. Thus, I see no reason why instructional conditions in South Africa would limit the transfer of Keller Plan technology.
- 3.9 Charges of cultural imperialism have been levied at the project (4). To the extent that South African educators have this view, they will resist transferring Keller Plan technology into their system of education. I could only find the view expressed in one document, however, and I doubt that it is a serious problem. If the technology is given a fair test, its value for instruction and its freedom from cultural bias should become apparent.
- 3.10 Conclusions. I am optimistic that Keller Plan technology, on which the Study Guides and Curriculum Development Worksheets are based, can be transferred successfully to the South African education system. Since this technology is of demonstrated effectiveness,

its transfer to South Africa promises to result in higher academic achievement for black South African students.

III. Evaluation of Concept Development Worksheets (CDWs)

A. Do the CDWs relate meaningfully to the Study Guides?

1. The Study Guides developed under the original contract are intended to help students prepare to take the JMB. They are similar to the many books available in American bookstores that prepare students to take the SAT, GRE, MCAT, and other examinations required for admission to post-secondary degree programs. The purpose of these books (including the Study Guides) is not to teach academic subjects, but rather to help the student quickly review them before taking the examination.
2. The Concept Development Worksheets (CDWs) being developed under the contract amendment of 2/1/84 have a different purpose than the Study Guides. They are intended to provide instruction in the concepts and skills of academic subjects whose mastery is tested on the JMB. In effect, the CDWs function like a textbook, except that they cover a course of study (e.g., algebra) in a series of 60 page-or-so booklets rather than a single large book.
3. I think, then, that the Study Guides do relate meaningfully to each other. The CDWs provide instruction in three subject areas (English, mathematics, and the physical sciences), and the Study Guides provide review in the same three subject areas. The CDWs are written for instruction in Standards 6-8, the grade levels at

which these subjects are taught, and the CDWs are written for review in Standard 10, the grade level at which many students are thinking about getting ready for the JMB.

4. The CDWs and Study Guides also relate meaningfully to each other in that the content of both is determined by the syllabus for the JMB.
5. Conclusions. The CDWs are a worthwhile extension of the Study Guides. Each serves an important, non-redundant instructional purpose.

B. Do the CDWs relate meaningfully to the Joint Matriculation Board examination?

1. My discussions with the curriculum developers working on the CDWs in mathematics, English, and the physical sciences revealed that they are conscientious about basing the CDWs on the JMB syllabus.
2. Ken Majer, principal investigator for the project, told me that he and the curriculum developers analyzed JMBs administered over the past 10 years in order to determine the content and skills to be covered in the CDWs.
3. The CDWs (and Study Guides) cover three of the eight subject areas tested on the JMB. Thus, the possibility exists that students could master the concepts and skills in the CDWs, do well on the three parts of the JMB covering those concepts and skills, and do poorly on the other five parts of the JMB not covered by the CDWs.
4. The CGI-AID contract specified development of 60 CDWs in mathematics, 50 CDWs in the physical sciences, and 40 CDWs in English.

This amount of CDW development was thought to be necessary to provide instruction in all of the concepts and skills included in the JMB syllabus for mathematics, physical sciences, and English.

5. A letter from Ken Majer to Roger Carlson, dated August 7, 1984, indicates "a reduction of the number of CDWs to be produced to 26 in English and 32 in physical science." The same letter indicates that the originally specified number of CDWs in mathematics to be developed would remain unchanged. It seems, then, that the CDWs in English and the physical sciences will fall well short of covering all of the concepts and skills included in the JMB syllabus.
6. Conclusions. It is clear that the CDWs will provide only partial coverage of the JMB syllabus. I do not know the effect that this limitation will have on instructional use of the CDWs or on students' ability to pass the JMB. South African educators and students should be made aware that the CDWs provide very limited coverage of the concepts and skills in the JMB syllabus, so that they do not place undue reliance on the CDWs as instructional texts.

C. Is the design of the CDWs technically sound and culturally appropriate?

1. I had the opportunity to examine many of the CDWs during my visit to CGI. The design of the CDWs, in my opinion, is of high technical quality. Each CDW contains elements that are standard features of Keller Plan materials. Similar elements (i.e., objectives, statement of prerequisites, self-check exercises, and summaries) are found in other state-of-the-art instructional materials being developed currently in the United States.

2. I think it would be desirable for the CDWs to include alternate forms of a mastery test. This feature would enable a student who failed the first mastery test to re-study the CDW and then to take another mastery test. This feature could be added easily to the existing CDWs if users felt it was desirable.
3. The curriculum content appears well-analyzed. Each lesson of a CDW presents a limited amount of new content so that the student is not overwhelmed.
4. I did not do a readability analysis of the materials using standard readability formulas because I am not at all certain that the grade-level norms for these formulas would apply to black South African education. My impression is that the CDWs would require a high reading level. The text is well-written, but most of the concepts and principles being presented are at a high level of abstraction. If the CDWs were to be used in this country, they probably would be appropriate only for academically capable, college-bound students in their junior or senior year of high school.
5. I do not find anything in the CDWs that would make them culturally inappropriate. The JMB syllabus appears heavily influenced by the traditional British curriculum for university-bound students. The curriculum is based on study of the major academic disciplines. The CDW format seems well suited for this purpose.
6. The technology on which the CDWs are based calls for these materials to be used in a setting involving self-paced, individualized instruction. The Urban Foundation reports (6,8) indicate that South

African instruction primarily involves teacher-paced, group instruction. Thus, there would be a discrepancy if the CDWs were to be used in that setting. I think that appropriate adjustments could be made by most teachers, however, to accommodate the CDWs within their conventional mode of instruction.

7. Discrepancies in instructional methodology should be no problem when the CDWs are used in nonformal, community-based instruction. In fact, the CDWs seem ideally suited for this purpose. The segmented, sequential features of the CDWs make it very easy for a tutor and student to start and stop instruction in a curriculum subject.
8. The CDWs are based entirely on print technology. The page layout consists of one-color type and graphics, and so it is easy to produce multiple copies. It is not certain at this point whether the final version of the CDWs will be typeset. Although typesetting is a desirable feature, the present versions, which are typed by a computer printer, look good.
9. Even though print is an inexpensive medium of instruction, costs do need to be considered. In his August 7, 1984 letter to Roger Carlson, Ken Majer noted that, "To print the 10,000 sets [of CDWs] needed to serve the community's needs over the life of the project, our South African printing company estimates a cost of \$426,000." In the same letter Dr. Majer observes that only \$56,250 has been budgeted for this purpose. Since black South African education is severely underfunded, the CDWs -- inexpensive as they are -- may not

reach all students who could benefit from them.

10. Conclusions. I find that the CDWs represent a high level of technical sophistication and cultural appropriateness. My only concerns are these: the CDWs will be difficult for students with weak reading skills; the CDWs will need to be modified if used for conventional classroom instruction; and printing costs could be a problem in disseminating them. I recommend development of alternate mastery tests for each DCW, but this is not a high priority.

D. Is a sound process being used to develop the CDWs?

1. The process for developing the CDWs is specified in an early planning document prepared by CGI (9, page 2):
 - a. Task analysis of UPP Study Guide concepts
 - b. Specification of instructional objectives
 - c. Draft of CDW by curriculum writer
 - d. Review I by senior program overseer
 - e. Review II by SACHED community expert
 - f. Revised CDW
 - g. In-house field test by black South African students
 - h. Revised CDW
 - i. South African field test by community

This is a sound process for developing curriculum materials. It is a process widely advocated and practiced by instructional technologists.

2. The process appears to be being followed, with one major exception. I can find little evidence that field testing of the CDWs is

occurring. The only instance of field testing that I could locate occurred in early 1984 in Cape Town (10). Fifty African, Asian, and "coloured" students reviewed 25 of the math CDWs. In my opinion, this was a very limited field test because the students did not use the materials under actual field conditions. Rather the students "reviewed" the materials by reading them and then providing feedback on a questionnaire. This kind of data is useful, but it provides no information about strengths and weaknesses of the materials under actual tutorial or group teaching conditions.

3. My conversations with the writers of CDWs in San Diego indicated that the lack of field test data has hindered the development process. Continual feedback from students and teachers is crucial to insuring that the materials are clear and usable.
4. One of the project administrators in San Diego told me, "We wanted to field test and revise, but there was pressure to get on with it." It appears that the priority is to use project resources to write a large number of CDWs rather than to conduct extensive field testing on a smaller number of CDWs.
5. Despite the lack of field testing, the curriculum writers appear to be doing a good job of developing the CDWs. I was impressed by the quality of personnel recruited for these positions. Each of them is an expert in his or her curriculum specialty, and each of them is dedicated to achieving the project objectives. They also appear to be well supervised, as evidenced by the fact that the quality and

- style of the CDWs both within and across the three subjects (English, math, and the physical sciences) are highly consistent.
6. The support services for curriculum development at CGI are very good. The curriculum writers have available good graphic artists, state-of-the-art word processing equipment, and comfortable work space. I was impressed, too, by the flowcharting of the curriculum development process. A flowchart is updated regularly so that anyone can determine where a particular CDW is in the development process.
 7. CGI and the South African Committee for Higher Education (SACHED) entered into a joint agreement (11) dated 4/2/84 to co-develop a series of math CDWs. The co-development process outlined in their letter of agreement is, in my opinion, sound. My conversations with the two math curriculum writers in San Diego revealed that the actual co-development process is proceeding smoothly.
 8. A statement in one of the quarterly process reports (10, page 11) has implications for the success of the CGI-SACHED collaboration:
"SACHED's distance-learning materials are indeed more comprehensive and more fully self-instructional than the UPP CDWs. The CDWs rely more heavily on tutors, but SACHED's distance-learning courses have incorporated certain elements of the Keller Plan methodology and also use tutors, but mainly for encouraging the student. CDWs are designed to be supplemental to classroom instruction and are targeted mainly at high school students. SACHED's materials are targeted mainly at

adults or other out-of-school learners. The two sets of instructional materials share, however, the common objective of educating students whose formal education is inadequate."

Since the two agencies share a similar instructional technology, the collaborative development effort is likely to be productive. Also, it appears that SACHED -- and perhaps other South African agencies as well -- could take increased responsibility for developing CDWs should AID and CGI wish to move in that direction.

9. Conclusions } The approach being used by CGI to develop CDWs is sound. It conforms well to the approach recommended by experts in instructional technology. The curriculum writers and support services for the CDWs are excellent. The collaboration between CGI and SACHED in developing math CDWs is very promising. The only substantial weakness in the development process is the fact that most of the CDWs developed to date have undergone no field testing. Steps should be taken to insure that field testing and revision of the CDWs occurs before they are disseminated for operational use.

E. Is development of the CDWs on schedule?

1. The original AID-CGI contract specified that 150 CDWs were to be developed. We were told by the project administrators that because of various contract modifications and amendments, the number of CDWs to be developed has been reduced. The current contractual obligation is to (a) develop, (b) field test, (c) revise, and (d) print 100 CDWs.
2. Jim Perry and I examined the CDWs to determine which ones have been

developed to date. We found that a total of 98 CDWs have been written. Their distribution across subject areas is as follows: 22 English CDWs; 44 math CDWs; 15 physics CDWs; and 17 chemistry CDWs. Approximately one-fourth of them were not completely written, word-processed, and/or illustrated as of the end of March, when we visited CGI's offices.

3. We were told by the project administrators that funding runs out for the physical science and English CDWs in June 1985, and for the math CDWs in September. It appears that these funding termination dates will cause the project to fall well short of meeting its contractual obligations.
4. Several explanations were offered by the project administrators for the fact that CDW development is seriously behind schedule. These explanations involve unanticipated events in South Africa, Washington - imposed hiatuses that have shut down the project for up to five months at a time, and diversion of CDW development funds for other purposes relating to the contract.
5. Conclusions. It appears that the development of the CDWs is seriously off schedule. If funding runs out before the initial drafts of the 100 CDWs are completed, it will be difficult to complete them at some future point. The reason is that once the curriculum writers have left the project, new curriculum writers probably will experience many problems in conceptualizing the curriculum scope and sequence to determine what remains to be done. Either the writing of the CDWs should be funded to

completion, or the current curriculum writers should make careful notes when they leave so that new writers will know how to pick up the threads.

IV. Evaluation of Trainer and Tutor Components

A. Is the process used to train trainers technically sound and culturally appropriate?

1. Tutoring is the instructional method used with the CDWs. When the CDWs and Study Guides are used in the context of the University Preparation Programme, the tutoring is done by volunteers, many of whom apparently have not completed a teacher education program. Therefore, the volunteer tutors need training in effective tutoring techniques. The plan under the CGI-AID contract is to have "trainers" who will teach the effective tutoring techniques to the volunteer tutors. In turn, the trainers need training in techniques for conducting this work effectively. Thus, the "training of trainers" is an important component of the CGI-AID contract.
2. The primary material used to train the trainers is a book developed by CGI (12). Called Training Manual, this book contains tutoring concepts and procedures needed to use the CDWs and Study Guides effectively. An instructional videotape on probing techniques accompanies Chapter 8.
3. The Training Manual is well-written and comprehensive. I think it is a text that can be used effectively by trainers to train tutors.
4. A major limitation of the Training Manual is that it is primarily

oriented to techniques for tutoring students who are using the Study Guides. This limitation exists because the manual was written before the CDWs were developed. (I made this inference based on the fact that the copyright date for the manual is 1981, which is before development of CDWs began.) It seems to me likely that tutoring students on CDWs would differ markedly from tutoring students on Study Guides. There is no discussion of these differences in the manual.

5. The procedures used in the training of trainers are described in one of the Quarterly Progress Reports (13, see Attachment C) and in the report of a training conference held in mid-1984 (14). The objectives for the workshop (see page 2 of the report), the schedule of activities (see page 3), and the training method (see page 2) appear sound. The training might be more effective, however, if the CGI staff would demonstrate effective tutoring techniques by using them with a few actual students invited to the conference for this purpose.
6. The cost-effectiveness of the training of trainers component is a possible concern. In the 1984 training conference, a team of five American educators trained a total of ten South African trainers for two weeks. It may be difficult in the future to justify this large a team of American "trainers of trainers" unless a much larger number of South African trainers attend the conference.
7. The ten South Africans who attended the 1984 "training of trainers" conference generally responded favorably to the training procedures

(13, see appendix B). No one made any mention of cultural bias in the materials or training procedures.

8. Conclusions. The process used to train trainers is, for the most part, technically sound and culturally appropriate. I see the need, however, to revise the Training Manual to include techniques for using the CDWs. Instructional videotapes of tutoring with these materials also would be desirable.

It may be necessary to revise the manual or to write a separate manual on procedures for using CDWs and Study Guides in the context of regular classroom instruction.

B. Is the training on schedule?

1. The CGI-AID contract (1.1) calls for training of five South African trainers "from politically and geographically representative groups throughout the country and one incountry training center" (page 2). Since ten trainers from different regions were trained in the Johannesburg conference of June 25-July 7, 1984 (14), it appears that the schedule for training has been met and exceeded.
2. Training of trainers from the Natal region appears to be a problem. No trainers from this region attended the conference (15), and despite continuing efforts (16), no potential Natal trainers have been identified.
3. The CGI-AID contract (1.1) further specifies "follow-up support to these trainers in their initiation of tutor/teacher training in South Africa." Also, CGI is contractually obligated to "assist the trainers in implementation of their training activities, ensuring

that 150-200 tutors/teachers are trained in the first 18 months of the project, and an additional 350-400 tutors/teachers are trained by the end of the contract period" (page 2).

4. I could locate only a few sources of information about whether support of the trainers in implementing training activities has occurred. An allusion to implementation activities was made in the letter of September 27, 1984 from Ken Majer to Steve Weissman. In that letter Ken Majer referred to the "training of trainers" conference in Johannesburg (14), and he stated that these trainers would begin training tutors in October 1984.

Another report (17) refers to a tutor training workshop conducted at Port Elizabeth January 21-31, 1985. Two of the trainers who attended the Johannesburg conference (14) conducted the workshop with the assistance of a CGI consultant. The number of tutors trained in the workshop is not specified in the report.

5. Conclusions. The training of trainers has occurred on schedule and, in fact, more trainers participated than were required by the AID-CGI contract. I cannot determine, however, whether all of these trainers have received follow-up support from CGI and whether they have trained the number of tutors specified in the contract.

C. Is the process used to train tutors technically sound and culturally appropriate?

1. The procedures for training tutors are essentially the same as those used for training the trainers (see IV.A above). These

procedures appear technically sound and culturally appropriate for both groups.

2. The plan for the tutor training workshop at Port Elizabeth University (17) includes a process in which trainers supervise tutors in the field after the tutors have been trained. Chapter 11 of the tutor training manual (12) specify procedures and forms for this purpose. The supervisory component of the tutor training process is essential and is likely to be effective if implemented.
3. As I stated in section IV.A, the training of trainers is primarily oriented to the Study Guides rather than to the CDWs. The same orientation apparently applies to the training of tutors.
4. The purpose of the tutor training is to enable tutors to assist South African students to use CDWs to learn three highly academic subjects -- English, mathematics, and the physical sciences. Effective tutoring requires a sophisticated knowledge of these academic subjects, especially if the tutor is to use properly the task analysis techniques described in the training manual (12, see Chapters 5 and 6.) I could not find in any of the documents available to me a set of procedures and criteria for selecting tutors who are academically qualified to assist students with the CDWs. The identification of tutors with the required qualifications is likely to be an enormous problem.
5. Conclusions. The process used to train tutors appears technically sound and culturally appropriate in most respects. Additional materials may need to be developed to insure that academically

qualified tutors are selected and that the tutors can use the CDWs effectively. Identification of qualified tutors could be a serious problem.

D. Is the training of tutors on schedule?

1. As I indicated in Section IV.B.3 above, CGI is contractually obligated to train at least 150 tutors by the end of the contract period.
2. During my visit to CGI's offices in March, I was told by the project administrators that approximately 50 tutors had been trained at that point in time. Another 30 tutors were to be trained in the next few weeks. The first group of tutors had been trained in January of that year.
3. One cause for the low number of tutors trained to this point in the project is the black student boycotts in South Africa. An indication of the problem can be found in CGI's Quarterly Progress Report of January 1985 (16):

"... plans for the Black Student Study Project (BSSP) to have its tutors trained by UPP Trainers had been proceeding rapidly. The continuing boycotts caused debates within that organization as to whether its students should engage even in non-formal tutoring. Consequently, UPP training for the BSSP tutors did not take place during the Quarter as planned"
(p. 3).
4. Conclusions. It does not appear likely that CGI will be able to train at least 500 tutors by the end of the contract period.

Factors beyond CGI's control appear to be at least partially responsible for the problem.

V. Evaluation of Coordination and Communication Components

A. Are the coordination and communication components technically sound and culturally appropriate?

1. I did not formally seek to answer this question as part of my evaluation of the CGI-AID project. Therefore, I have only a few observations to make about this aspect of the project.
2. The CDWs and Study Guides are intended to be used in a "community-based tutorial program" (9, see page 1). The extent to which such a "program" exists is unclear in the documents I examined and in my discussions with the project administrators. It appears, instead, that there are multiple programs that vary in organizational structure. There is the University Preparation Programme, distance education programs, and programs of privately financed tuition centers. There is also some indication in the documents available to me that the CDWs are or will be used in black formal education.
3. The programs vary in the degree to which they are formal or non-formal. In non-formal programs, tutoring students with the use of CDWs and Study Guides is to occur after school hours, on weekends, and during school vacations.
4. It is important to keep in mind that the content of the Study Guides and CDWs covers an elite, highly abstract, and demanding

curriculum. If they are to be used in the context of a non-formal program, the program will need to be very well-organized and supervised. I imagine that it would be very difficult to recruit and retain tutors who have expertise in the subject matter covered by the Study Guides and CDWs.

5. Conclusions. I do not have sufficient data to judge whether South African non-formal agencies have the organizational capability to sponsor the type of tutoring program required to prepare students for the JMB. If they do not have the capability, it may be very difficult to develop since I imagine that highly trained personnel (i.e., tutors who are expert in the JMB syllabus and supervisors of the tutors) needed for the program would not be readily available. An alternative approach would be to develop further the organizational capability of existing formal education agencies to serve students preparing for the JMB.

VI. Evaluation of Project Evaluation Components

A. Is the plan for project evaluation technically sound and culturally appropriate?

1. The AID-CGI contract (1.1) specifies that project evaluation will occur on a regular, systematic basis. The contract language (see page 4) implies development of a plan for project evaluation that includes the following procedures:
 - a. a procedure for training South African trainers in the techniques of data collection and evaluation.

- b. a procedure for tutors to use in recording student progress data.
- c. a procedure for collecting student progress data from tutors on a monthly basis and transmitting the data to the program coordinator and to CGI.
- d. a procedure for identifying requirements for additional non-formal training and instructional development in South Africa beyond the life and scope of the contract.

The contract also specifies that the results of these evaluation efforts will be communicated to AID in CGI's quarterly progress reports.

2. Some of the elements of an evaluation plan can be found in a proposal prepared by CGI in June 1982 (9, see pages 3-4). The specified elements are sound, but I can find no indication that a full-scale evaluation plan has been developed by CGI.
3. The Urban Foundation's evaluations of the Study Guides (6,8) appear to have resulted from a deliberate evaluation plan. I could find no indication, however, that their plan was influenced by, or in response to, CGI's contractual obligations for evaluation.
4. Given the scope ^{of} ~~for~~ project evaluation in the AID-CGI contract (see section VI.A.1 of this report), I would expect that the plan would specify procedures for collecting data on the following items on a regular basis:
 - a. number of program coordinators
 - b. number of trainers

- c. number of tutors
- d. number of students being tutored or using the CDWs and Study Guides
- e. student progress in completing CDWs
- f. perceived strengths and weaknesses of the CDWs and Study Guides
- g. organizations adopting the CDWs and Study Guides
- h. instances of South African curriculum development influenced by the project's instructional technology
- i. status of normal and formal education for black South Africans
- j. percentage of black South Africans taking and passing the JMB

None of CGI's quarterly process reports or other documents provide evidence that data on any of these items is being collected on a regular, systematic basis.

5. Conclusions. It appears that a plan for project evaluation has not been developed yet. Therefore, it is not possible to judge its technical soundness and cultural appropriateness.

B. Is project evaluation on schedule?

1. There are some indications of project evaluation among the documents available to me.
2. The Urban Foundation is conducting a three-phase evaluation of the Study Guides. Two of the phases have been completed and reported

(6,8). The first phase focussed on an evaluation of the Study Guides. The second phase focussed on an evaluation of the implementation of the Study Guides. The third phase will evaluate the examination performance of students who have used the Study Guides. Surprisingly, the intent of the evaluators is to use student performance on the National Senior Certificate examinations, rather than on the JMB examinations, as the criterion (8, see page 2). This plan is surprising since the specific purpose of the Study Guides and CDWs is to improve student performance on the JMB examinations.

3. It should be noted that the design of the Urban foundation's evaluation applies only to the Study Guides. With slight modifications, the same design could be applied to an evaluation of the CDWs.
4. Letters of agreement involving CGI and the Part Time University Students' Association (18), the Cape Teachers' Professional Association (19), and the Centre for Continuing Education at the University of Port Elizabeth (20) were signed in February 1985. Several of the obligations of these associations and centers involve project evaluation functions. For example:
 - 2.2 Keep records of Study Guides and Concept Development Work Sheets received from the Executive Secretary...
 - 2.3 Prepare, write and forward monthly reports... on the distribution of Study Guides and Concept Development Work Sheets...
 - 2.5 Keep records, on the prescribed forms, of all tutor

training...

- 2.7 Distribute to the participating organizations evaluation forms and other evaluation documentation received from the Executive Secretary of the UPP
- 2.11 Complete the prescribed forms on the hours of tutor training carried out by tutor trainers.

I do not have information about whether these functions have been implemented.

- 5. Chapter 11 of the Training Manual (12) includes several procedures and forms for evaluating tutor performance and student progress. I do not have information about whether these procedures and forms have been implemented.
- 6. Conclusions. Elements of project evaluation that are relevant to CGI's contractual obligations appear to be in place. I cannot determine whether project evaluation is on schedule, however, because of the unavailability of a plan for project evaluation and a projected schedule for completion of the evaluation activities.

VII. Summary of Project Strengths and Weaknesses

← A. Project Strengths

- 1. The project materials (Study Guides and CDWs) are based on sound instructional technology.
- 2. The project materials show promise of being adopted and used by South African educators.
- 3. The instructional technology underlying the materials is likely to

transfer effectively to South Africa and to result in improvement of its educational system.

4. The CDWs currently under development are worthwhile, non-redundant extension of the Study Guides. Their technical quality and cultural appropriateness are good.
5. The collaboration between CGI and SACHED in developing math CDWs is likely to improve in-country capability for developing other materials after the AID-CGI project has been completed.
6. The process for training trainers and tutors is technically sound and culturally appropriate.

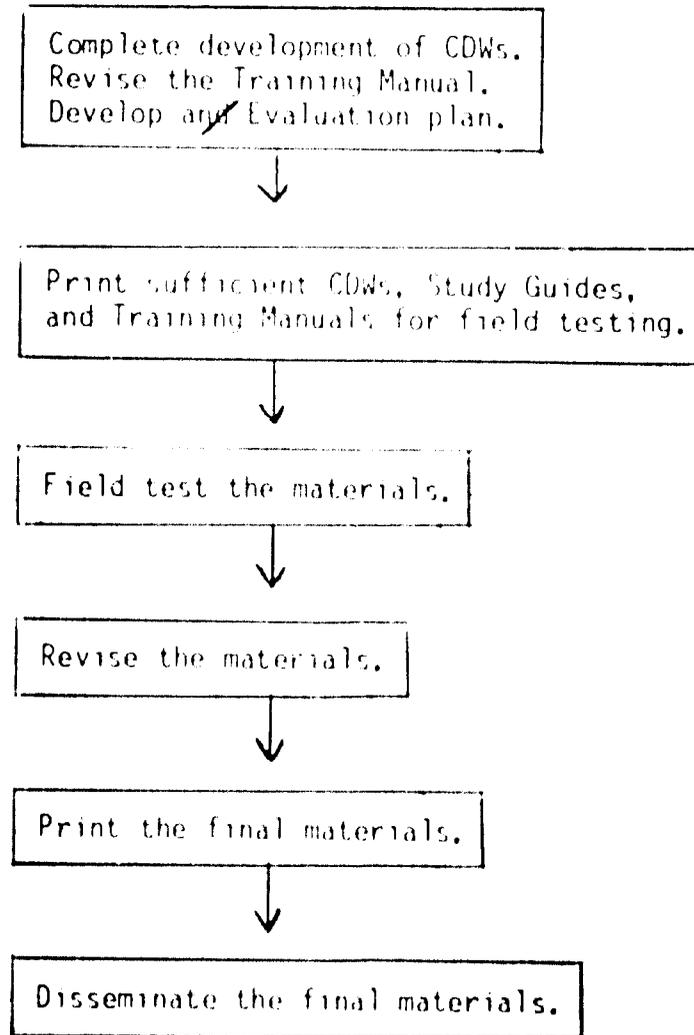
B. Project Weaknesses

1. There was insufficient documentation at the project's outset that there is a need for these materials.
2. The usefulness of the materials for preparing students for examinations other than the JMB, Higher Grade, has not been demonstrated.
3. The project materials will only prepare students for three of the eight areas of the JMB examination.
4. The lack of field testing is a serious weakness in the process used to develop the project materials.
5. Procedures to insure that qualified tutors are selected have not been developed.
6. A systematic plan for project evaluation has not been developed.
7. The project is behind schedule in development of CDWs and tutor training, and is probably behind schedule in evaluation activities.

VIII. Possible Courses of Future Action

1. All of the contracted CDWs should be developed. A partially completed set of CDWs for a particular curriculum subject is not likely to be of use to South African educators. Thus, the entire investment in those CDWs would be lost. Additional funds to complete CDW development would insure that the funds invested thus far pay off.
2. The Training Manual should be revised to include techniques for using the CDWs. The present version of the manual only includes techniques for the Study Guides.
3. An evaluation plan should be developed. The focus of the plan should be on ~~field test~~ procedures for insuring that criticisms and suggestions for revision by ^{field test} users of the CDWs, Study Guides, and Training Manual are recorded systematically and fed back to the developers.
4. Printing of the CDWs, Study Guides, and Training Manuals should be limited to the number of copies needed for field testing. Printing of copies for widespread dissemination should wait until field testing and product revision have been completed.
5. My understanding is that all of the project materials are stored on computer discs. These discs should be carefully stored and backed up so that they can be used to revise the project materials. This procedure will save the expense of typing and proofing all of the materials from scratch.

6. The recommendations stated above suggest the following time line for project completion:



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