

PD-NBD-124

A.I.D. EVALUATION SUMMARY - PART I

1. BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS.
 2. USE LETTER QUALITY TYPE, NOT FOOT MATRIXX TYPE

IDENTIFICATION DATA

A. Reporting A.I.D. Unit: Mission or AID/W Office: <u>USAID/BOTSWANA</u> IESP: _____	B. Was Evaluation Scheduled in Current FY Annual Evaluation Plan? Yes <input checked="" type="checkbox"/> Slipped <input type="checkbox"/> Ad Hoc <input type="checkbox"/> Evaluation Plan Submission Date: FY _____ Q _____	C. Evaluation Timing: Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Ex Post <input type="checkbox"/> Other <input type="checkbox"/>
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D. Activity or Activities Evaluated (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report.)

Project No.	Project / Program Title	First PEOAG or Equivalent (FY)	Most Recent PACC (Mo/Yr)	Planned LCP Cost (000)	Amount Obligated to Date (000)
633-0229	Junior Secondary Education Improvement Project	4/19/85	4/18/92	\$14,427	\$14,427

ACTIONS

Action Decisions Approved By Mission or AID/W Office Director	Name of Officer Responsible for Action	Date Action to be Completed
Action(s) Required		
1. The Project should concentrate on finalizing as many of the major tasks currently underway as possible (see attached detailed list).		
15. The following activities are important for the continued MOE capacity building: (a) Continue to develop counterpart skills for management of Curriculum Development & Evaluation (CD&E) and MOE. (b) Continue to conduct in-country workshops and short-term training for MOE staff. (c) Consider continuing joint participant training Masters' degree effort between the University of Botswana and the Florida State University in future USAID's support to MOE. (d) Work to bring about a new job evaluation system, and for reclassification of MOE posts accordingly.	C.O.P./JSEIP C.O.P./JSEIP C.O.P./JSEIP MOE	Nov.30,1991 Nov.30,1991

(Attach extra sheets if necessary)

APPROVALS

F. Date of Mission or AID/W Office Review of Evaluation: _____ (Month) _____ (Day) _____ (Year)

G. Approvals of Evaluation Summary And Action Decisions:

	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
Name (Typed)	Barbara Belong HRDO		David H. Mandel Actg. Eval. Officer	David H. Mandel Actg. Director
Signature	<i>B. Belong</i>		<i>[Signature]</i>	<i>[Signature]</i>
Date	8/26/91		8/26/91	8/26/91

Actions Required	Name of Officer Respon.for Action	Date Action to be completec
1. Complete an investigation of reduction in breadth of curriculum in favor of depth of coverage.	C.O.P./JSEIP	Dec. 15, 1991
2. Articulate guidelines for years 1-9 curriculum development.	JSEIP/CD&E	Oct. 1991
3. Develop research reviews relevant to curriculum development.	C.O.P. JSEIP, PEO, CDU	by Dec. 1991
4. Identify counterpart for Art Advisor in the Curriculum Development Unit (CDU).	MOE/CD&E	Sept. 1991
5. Revisit philosophies of teacher training colleges at MCE and Tonota.	JSEIP/PEIP/ Principals	Dec. 1991
6. Continue short-term visitations for all college principals to USA colleges.	C.O.P./JSEIP	Dec. 1991
7. Identify new counterparts for Resident Technical Advisors (RTAs) at Molepolole College of Education (MCE).	Principal, MCE	June 1991
8. Resolve placement of Field Education Officers (FEOs).	P.S., D.P.S., MOE	Aug. 1991
9. Provide a counterpart for the inservice advisor.	CEO, DTE	June 1991
10. Support a National Conference on Inservice Education.	JSEIP/MOE	ongoing
11. Develop a plan to create educational research posts.	Planning Unit/ MOE	March 1991
12. Identify research needs.	MOE	July 1991
13. Develop a research organizational plan.	Planning Unit MOE	
14. Identify counterparts for the follow-on Basic Education Consolidation (BEC) Project.	CEOs; CD&E,DTE	Sept. 1991

The project assisted the Government of Botswana (GOB) during the rapid expansion of the Junior Secondary School system. Its purpose was to increase the quality and efficiency of this system and to institutionalize the capacity of the Ministry of Education (MOE) to develop, manage, and support this system. The project was implemented by a consortium which included Florida State University (FSU), State University of New York (SUNY)-Albany, Howard University and the Institute for International Research. The principal contractor was FSU. The project team consisted of ten individuals working in the three areas of major focus of the project: curriculum design and instructional materials development, teacher development, and educational systems management, planning, and supervision. The final evaluation (Aug. 13-31 1990) was conducted by a representative from the University of Pennsylvania and two contract evaluation specialists from Multi-Services Inc., Washington D.C..

Major findings and recommendations are as follows:

1. USAID should continue supporting activities and efforts to (a) strengthen the capacity of the Curriculum development and Evaluation Department (CD&E Dept); (b) assist the MOE in the revised curriculum and instructional program at the Junior secondary level; (c) assist in the preservice and inservice training program at the junior secondary level.
2. The joint training programs between FSU and the University of Botswana have been effective and relevant and should continue to receive USAID support.
3. To integrate USAID's previous experience in the education sector with the design of a follow-on project; a representative of the JSEIP and PEIP staff should either be part of the new project's design team or a consultant to the team.
4. JSEIP's role of capacity building should be continued.
5. A public information and public relations unit should be considered within the MOE to inform the public and policy makers' of new and ongoing initiatives.
6. Creation of an oversight mechanism/advisory group in the Ministry of Finance & Devt. Planning and/or the MOE would facilitate coordination of donor efforts.
7. A regular seminar series for educators and policy makers should be established to consider a range of ideas and findings for application to Botswana's school improvement and expansion efforts. Speakers should include both local educators and visiting consultants.

COSTS

1. Evaluation Costs				
Name	Affiliation	Contract: Number OR TDY Person Days	Contract: Cost OR TDY Cost (U.S. \$)	Source of Funds
Prof. Richard Kraft	Univ. of Colorado/ MSI	20	\$43,764.00	Project 633-0229 633-0229-C-00 0007
Dr. Joanne Capper	MSI	20		
2. Mission/Office Professional Staff Person-Days (Estimate) <u>8</u>		3. Borrower/Grantee Professional Staff Person-Days (Estimate) <u>6</u>		

A.I.D. EVALUATION SUMMARY - PART-II

S U M M A R Y

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided)

Address the following items:

- Purpose of evaluation and methodology used
- Purpose of activity(ies) evaluated
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office:

Date This Summary Prepared:

Title And Date Of Full Evaluation Report:

USAID/BOTSWANA

1. Purpose of the Evaluation and Methodology Used.

The purpose of the evaluation was to assess progress of JSEIP to date with focus on project activities directly related to the following objectives:

- (i) Strengthen the capacity of the Curriculum Development and Evaluation Dept (CD/E Dept) with particular attention to the Curriculum Development Unit (CDU)
- (ii) Assist the MOE in the Revised Curriculum and Instructional Program at the junior secondary level.
- (iii) Assist in the pre-service and in-service training program at the junior secondary level.

The evaluation was to determine which project objectives are still realistic, with specific reference to the measurable outputs and their effect on original target groups. Special attention was placed on assessing the institution building aspects of the project. The evaluation was also to establish a desired and feasible end-of-project status (EOPs) in light of current institutional and personnel constraints, and to provide recommendations for achieving updated EOPs. Finally, the evaluation was to report any intended outcomes which would not be achieved and the significance of this shortfall.

The Evaluation Team (a) interviewed JSEIP staff, USAID representatives, members of the Primary Education Improvement Project (PEIP), Government of Botswana (GOB) officials, and classroom teachers, (b) revised reports, publications and curriculum materials, and (c) visited several schools, colleges, the University of Botswana (UB) and an education center.

2. Relationship to Mission Strategy.

The USAID/Botswana Mission places emphasis on human resource skills development for job creation. Shortages of skilled labor require more qualified individuals to be made eligible for vocational and technical training. The JSEIP project was designed to help improve the quality and efficiency of an expanding basic education system, thereby making junior secondary schools more responsive to national development needs by increasing student capabilities for skill training.

3. Basic Findings and Lessons Learned.

JSEIP has made a significant contribution to the strengthening of the education system in Botswana. However, the project encountered constraints which prevented it from being fully effective:

A. The organizational arrangement of JSEIP as a smoothly functioning project was dependent upon the separate abilities of USAID, GOB and FSU to perform on their commitments to JSEIP and the abilities of the three parties to collaborate. The operational component of JSEIP consisted of Resident Technical Advisors (RTAs) and expert consultants. The RTAs, for the most part, functioned as a loosely-coupled group of individuals, instead of a well-integrated and cohesive team with a common purpose.

C

This was in part due to the assignment of RTAs to four MOE units, each with different Missions - Curriculum Development and Evaluation (CD&E), Secondary Education (DSE), Molepolole College of Education (MCE) and Planning. Also, because of this affiliation with the various units and because the RTAs were not assigned the authority to proceed directly and unilaterally on project development, they often assumed high priority maintenance roles rather than providing advice and support to MOE counterparts.

B. During this period, there was considerable pressure within the MOE to expand the system, shift the junior secondary from three years to two, establish MCE, and deal with severe shortages of qualified professional personnel. As a result, RTAs were assigned duties predominantly in support of these functions. The assumption that the MOE could absorb such a complex instructional development program in 1985 proved to be too ambitious. The layers of administration involved in JSEIP included the GOB, USAID/Botswana, AID/Washington, FSU (and the consortium institutions) and the government bureaucracy of the State of Florida also contributed to excessive management complexity.

C. Organizational constraints within CD&E and DTE/DSE added to the complexity of the project. The lack of timely creation of posts in the MOE personnel structure hindered project development, and recruitment of counterparts for the RTAs. The Job Classification Exercise of Mid 1988 appears to have had a negative effect on the recruitment and retention of qualified personnel in the MOE. Finally, lack of clearly articulated lines of responsibility and coordination within the MOE continue to hamper the curriculum development process at the CD&E.

D. Despite these constraints, it can be concluded that JSEIP has been well administered and is functioning in a manner conducive to meeting its objectives.

4. Recommendations and Suggestions

A. Curriculum development recommendations

(i) Conduct a study to investigate reduction in the breadth of curriculum in favor of depth of coverage.

(ii) Articulate guidelines for years 1-9 curriculum development.

(iii) Develop research reviews relevant to curriculum development.

(iv) Identify counterparts for Art Advisor in the CDU.

B. Teacher Education Recommendations

(i) Revisit philosophies of teacher training colleges.

(ii) Short-term visitations for all college principals to USA Colleges.

(iii) Identify new counterparts for RTAs at MCE.

(iv) Resolve placement of Field Education Officers (FEOs), provide a counterpart for the inservice advisor, and support a national conference on inservice education.

C. Education Research Suggestions.

(i) Develop a plan to create educational research posts.

(ii) Identify research needs.

(iii) Plan for the continuance and nurturance of research functions.

(iv) Build research responsibilities into RTA positions.

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**JUNIOR SECONDARY EDUCATION
IMPROVEMENT PROJECT**

REVIEW AND EVALUATION REPORT

Evaluation Team

Erling E. Boe
University of Pennsylvania
Representing Florida State University

Joanne Capper
Private Consultant
Representing Multi-Services International, Inc.

Richard J. Kraft
Team Leader
University of Colorado
Representing Multi-Services International, Inc.

Gaborone, Botswana

August 31, 1990

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EXECUTIVE SUMMARY

Introduction

This summary highlights results from an evaluation of the Junior Secondary Education Improvement Project (JSEIP) performed for the United States Agency for International Development (USAID)/Botswana between August 13 and 31, 1990. The full report and related annexes represent a more complete findings.

The Evaluation Committee was composed of two contract evaluation specialists from Multi-Services International, Inc. of Washington D.C., an evaluator from the University of Pennsylvania, representing Florida State University (the prime contractor for JSEIP), a representative of the Curriculum Development and Evaluation Department (CD&E) of the Ministry of Education (MOE) of Botswana, the Human Resources Development Office (HRDO) of USAID/Botswana, and the Deputy Director of USAID/Botswana. This report has been prepared by the Evaluation Team composed of the three external members of the committee.

The Evaluation Team (a) interviewed JSEIP staff, USAID representatives, members of the Primary Education Improvement Project (PEIP), Government of Botswana (GOB) officials, and classroom teachers, (b) reviewed reports, publications and curriculum materials, and (c) visited several schools, colleges, the University of Botswana (UB) and an education center. See Appendix A in the main report for a full listing.

Major Findings and Recommendations

1. Background

- 1.1 Early History: Following an assessment in 1977 of the state of public education in Botswana by the National Commission on Education (NCE), the Government of Botswana (GOB) adopted a broad-based plan for development of its national education system. An international project, Improving the Efficiency of Educational Systems (IEES) issued *Botswana Education and Human Resource Sector Assessment* (1984; updated in 1986) which pointed clearly to the need for concerted effort to develop rapidly Botswana's junior secondary system. The Junior Secondary Education Improvement Project (JSEIP) was based on these documents, and the project was agreed upon in April, 1985, with operations commencing later that same year.
- 1.2 Purposes of the JSEIP: The initial purposes of the JSEIP were "To increase the quality and efficiency of the expanded basic junior secondary education system and to institutionalize the capacity of the MOE to develop, manage, and support the junior secondary education system." Three components, as defined in the

Project Paper, were envisioned to accomplish these purposes with a focus on the to-be-revised junior secondary level curriculum. as follows:

1. Curriculum and instructional materials development, including development of correlated achievement measures.
 2. Teacher development entailing development and implementation of pre-service and inservice teacher training programs consistent with the revised junior secondary program, thereby leading to implementation of the revised curricula.
 3. Education systems planning, management and supervision, entailing (a) developing the organizational structure with trained staff for the system, (b) developing and coordinating needs analysis, dissemination, and managerial components of the system, and (c) training workshops for inspectors, education officers and headmasters.
- 1.3 Project Procedures: The procedures designed to achieve the intended outputs were the extensive use of resident technical advisors (RTAs) and consultants, advanced training of local personnel in the United State, the acquisition and installation of state-of-the-art instructional technology, construction of facilities for the Curriculum Development and Evaluation Department (CD&E) and several Education Centers, and a comprehensive mechanism for monitoring educational quality and evaluation. The Project Paper anticipated a rapid project development pace, with major progress within the first six months, much of the development of materials in the first three years, and then implementation of the revised curriculum, along with inservice training, during the fourth through sixth project years.
- 1.4 Pace of Development: Such a rapid project development pace for JSEIP tacitly assumed that key units in the MOE were adequately organized, staffed and functioning to absorb as of September 1985, a complex, highly technical, high-intensity and intricately-coordinated instructional development program. The actual progress in the first two to three years indicates that this major assumption was not warranted. A mid-project evaluation in March, 1988 indicated reasons for the comparative lack of movement on the project and made a series of recommendations which led to a substantial redirection and rapid development, in spite of numerous contextual constraints.
- 1.5 Instructional Component: In April, 1990, a new PIO/T refined the project to focus more specifically on "the new instructional component, as contrasted to the prior more broad-based capacity-building approach. Since the original 1984 purposes and outputs, as such, were not incorporated into the PIO/T, these refined purposes, outputs and time line provide the current direction and expectations for JSEIP, and form the basis upon which its effectiveness should be judged. The new PIO/T extended the project for an additional fifteen months, until December 1991, to coincide with the ending of the Primary Education Improvement Project (PEIP), and to have it lead into the Basic Education Consolidation (BEC) now scheduled to begin in early 1992.

2. The Organization and Administration of JSEIP

Foreign Advisors often help us "blunder" into success, as they don't know all the rules or customs, and thus can move rapidly to bring about needed change.

MOE Administrator

Introduction

The choice of the word blunder was meant in a kindly manner, and was used deliberately to show how external advisors to a system can help to bring about changes. We list below some of the ways in which JSEIP has functioned and the constraints on the project. We believe that JSEIP has made significant progress in its own functioning, and in the many contributions it has made to education in Botswana.

- 2.1 **Organization of JSEIP:** The organizational arrangement of JSEIP as a smoothly functioning project, was dependent upon the separate abilities of USAID, GOB, and FSU to perform on their commitments to JSEIP and the abilities of the three parties to collaborate effectively. The operational component of JSEIP was the functioning of the group of RTAs and expert consultants. It is fair to observe that the RTAs have, for the most part, functioned as a loosely-coupled group of individuals, as contrasted with a highly-integrated and cohesive team with a common, narrowly-defined focus.
- 2.2 **Management:** The assignment of RTAs to four different MOE units (CD&E, DSE, MCE and Planning) and their commitment to immediate high priorities in these units, no doubt contributed to this loose coupling. Team building was not seen as a high priority by project staff. JSEIP staff were not assigned primary responsibility and authority to proceed directly and unilaterally on project developments, hence RTAs often assumed high-priority maintenance roles in the MOE units to which they were assigned.
- 2.3 **General Constraints:** With the tremendous pressures within the MOE to expand the system, shift the junior secondary from three years to two, establish MCE, and deal with severe shortages of qualified professional personnel RTAs were assigned duties predominantly in support of these functions. JSEIP as a complex project was poorly understood and often not accepted initially by MOE personnel.
- 2.4 **Administrative Constraint:** With the pressures listed above, the major presumption that the MOE could absorb such a complex instructional development program in 1985 was simply invalid. The layers of administration involved in JSEIP included the GOB, USAID/Botswana, AID/Washington, FSU (and the consortium institutions) and the government bureaucracy of the State of Florida. This led to complexities and serious delays in implementing decisions. RTAs brought together from literally around the world, with limited on-site administrative control, added to the difficulties of having an optimally functioning team.

- 2.5 Organizational Constraints: Organizational constraints within the MOE on the curriculum development and teacher inservice training authority added to the complexity of the project, in addition to administrative concerns on access to junior secondary schools. The timely creation of posts in the MOE personnel structure hindered project development, along with recruitment of counterparts for the RTAs. Finally, the Job Classification Exercise of mid-1988 appears to have had a major adverse effect on the recruitment and retention of qualified personnel in the MOE.
- 2.6 Current Status: Despite management concerns expressed in the Mid-Project Evaluation, the many pressures involved in a rapid expansion of the CD&E and the Junior Secondary system, the need to fulfill maintenance functions in the MOE, and the many constraints mentioned above, we conclude that JSEIP is now well administered and is functioning in a manner conducive to meeting the objectives set out for it under the PIO/T.
- 2.7 Organizational Recommendations: We recommend the following general actions for JSEIP.
- 2.71 New Projects: Almost everyone interviewed cautioned to "not start anything new in JSEIP's final months." We concur. The project should concentrate on finishing up as many of the major tasks currently underway as possible.
- 2.72 Joint Masters Degree: The joint participant training Masters' degree effort between the University of Botswana and Florida State University, while it had some initial difficulties, is an excellent model for similar programs in the future. The relevance of studies, cost benefits, and institutional development are but a few of the major benefits from such joint efforts. JSEIP and PEIP should continue to develop such programs for future involvement.
- 2.73 BEC Project Design: A representative from each of the JSEIP and PEIP staffs should be either part of the BEC project design team, or at least active on-going consultants to the team, so that the project can benefit from their understanding of the context and needs.
- 2.74 Capacity Building Recommendations: JSEIP should continue its capacity building role.
- 2.75 Continue to develop counterpart skills.
- 2.76 Continue to conduct workshops and short-term training for MOE staff.
- 2.77 Expend the rest of the appropriated funds on needed equipment.
- 2.78 Allocate whatever participant training monies are not yet expended into training counterparts to fill anticipated BEC position needs.
- 2.79 Help identify probable BEC counterparts already within the MOE.

- 2.80 Work to bring about a new job evaluation system, and for reclassification of MOE posts accordingly.

3. Organizational Issues within the MOE

The organizational problems we see arise more out of consensual pressure for rapid expansion and modernization than out of fundamentally inconsistent models at the policy level.

Meyer and Nagel, 1989

Introduction

Meyer and Nagel go on to state that unlike many other nations, Botswana does not suffer from "inconsistencies and ambiguities of policy." In fact, there appears to be a surprising policy consensus on almost all major issues concerning the educational system. There is a genuine commitment and felt urgency to create a new and national educational system. The new system is committed to serving the whole nation; to being a universal system; and to bringing about greater equality across genders, regions, strata and the rural/urban distinction. In addition, there appears to be a strong commitment that the educational system be modern and relevant to the lives of the Botswana individual and to the broader Botswana society. This consensus is almost unique in the developing world and is a staggering achievement.

- 3.1 Organizational Style: Vestiges of an older system left over from pre-independence days still exist; centralized authority and decision-making, established content, elite selection, testing and inspection, but there can be little doubt that the developing model in Botswana is a more decentralized and equalitarian system than that found in most developing nations. We applaud this movement.
- 3:2 Impact on Infrastructure: From a purely quantitative perspective, JSEIP has impacted the infrastructure of education in Botswana through:
- 48 person-years of resident technical assistance (currently 9 RTA's).
 - Construction of the CD&E Building and 5 of the 8 Education Centers (approximately U.S.\$2.2 million) 3 Centers built by PEIP.
 - Commodities—instructional materials, computers, furniture, vehicles, equipment and books (approximately U.S. \$1.2 million).
 - 26 Master degree courses of study completed, with a total of 28 expected by 1991.
 - Completion of 2,300 person months of short-term training, with over 4,000 by project completion in 1991.
 - 50 person-months of short-term technical assistance, using 70 local and foreign advisors to date.
- 3.3 Organizational Changes: In order for this developing system to maximize its potential we suggest the following possible organizational changes, all of which are dealt with in more detail in Chapter III of the main report.

- 3.31 The movement of Field Education Officers to the Department of Teacher Education as rapidly as possible.
- 3.32 The redefinition of the role of Secondary Education Officers.
- 3.33 The movement of all curricular development function to the CD&E.
- 3.34 Improved communications networks and linkages within the MOE.
- 3.35 Creation of a public information and public relations unit to inform the public and policy makers of new and ongoing initiatives.
- 3.36 Create an oversight mechanism/advisory group for external aid projects.
- 3.37 Establish a mechanism to develop closer relationships with the Ministry of Finance.
- 3.38 Establish a regular seminar series for educators and policy makers to consider a range of ideas and findings for application in Botswanas' school improvement and expansion efforts. Local residents and visiting consultants could speak at such a series.

4. JSEIP and the Curriculum Development and Evaluation Department (CD&E)

The expansion of the system has proceeded rapidly, accelerating dramatically since about 1983...despite rapid expansion, achievement has remained stable across the decade of growth.

Ramatsui, 1990

Introduction

With a junior secondary school enrollment increase from 14,000 in 1979 to 40,000 in 1990, the opening of a new teacher's training college now graduating close to 200 teachers a year, and the expansion from 16 junior secondary schools in 1980 to 125 in 1990, the above research based statement is a truly monumental achievement.

- 4.1 Institutionalizing Capacity: JSEIP has been instrumental in the development of the CD&E from a small department and staff within the central facility, to a functioning department, with a modern building, curriculum library, research and testing center, and equipment. JSEIP's goal of institutionalizing the capacity to "develop, manage, and support" the instructional component of the educational system has made substantial progress, and while important problems still exist, we believe this effort to be a success.
- 4.2 Curriculum Development: Due to a broad range of constraints detailed elsewhere in this evaluation, the junior secondary curriculum development aspect of the project has not gone as rapidly as the original time line had projected, nor as rapidly as the project staff might have liked. In comparison with the little progress that had been made by the Mid-Project Review, the past two years have been

quite productive. Instead, however, of all subject areas being completed by December 1990, as in the original Project Paper, only English and Setswana are close to target. Science, Social Studies, Art and Design and Technology have made significant progress and should reach completion in 1992 or 1993.

- 4.3 Curriculum Development Process: The curriculum development process and the materials produced have varied in quality, but some rank with the best in the world. Some advisors played a direct intervention role rather than a catalytic one, and developed most of the materials themselves. This could be problematic in the institutionalization of those materials. Trialing and field testing of materials were often inconsistent. Royalties and publishing rights still appear to be a major concern. Differing philosophies and approaches to subject matter more the rule than the exception among those materials produced to date. The age appropriateness and quality of materials also varies.
- 4.4 Curriculum Philosophy: While nine-year, universal Basic Education is now well on its way to completion, there is still little philosophical agreement between the current primary curriculum and the directions which appear to dominate the Junior Secondary. The Senior Secondary curriculum appears to be significantly out of line with the directions of either of the other two levels. A coherent twelve year curriculum is a long way from fruition.
- 4.5 Research and Testing Center: The Research and Testing Center has received considerable help from JSEIP, and is making plans to move towards continuous assessment and criterion-referenced testing. Through a wide range of interventions; participant training, short-term training, short- and long-term consultants, the examinations used on the PSLE and the Junior Certificate are beginning to be aligned to the newly-developed curriculum and to specific knowledge and skills that students learn in school.
- 4.6 Guidance and Counseling: The Guidance and Counseling Unit is making progress towards defining its role and through short-term consultants is developing vocational guidance and the counselling functions within the Jr. Secondary Schools. We recommend a greater clarity on the placement and role of the G&C unit within the CD&E.
- 4.7 Organizational Recommendations: The following additional organizational recommendations might help to strengthen the CD&E unit in its complex task.
 - 4.71 The standardization of procedures for members of the DTE, DSE, DPE, MCE, UB, and other interested parties to serve on panels and in other activities involving curriculum.
 - 4.72 Identify, attract and retain staff to fill all CD&E curriculum posts.
 - 4.73 Determine the location of the Teaching Aids Production Unit, given the Educational Publications Unit in the CD&E.

- 4.8 Curriculum Development Recommendations: In curriculum development, the following activities are suggested.
 - 4.81 Standardization of the selection of panel members.
 - 4.82 Improved procedures or guidelines for the writing, trialing, production, printing and formatting of curriculum materials.
 - 4.83 Greater consistency in the formatting of materials produced within the CD&E.
 - 4.84 Establish procedures to release curriculum and/or textbook writers from their regular work.
 - 4.85 Establish a formal policy that all materials produced through the CDU and/or by publishers must go through the entire field-test process.
 - 4.86 Conduct and use results of small-scale research studies on curricular issues.
 - 4.87 Set more reasonable production schedules.
 - 4.88 Conduct or contract for a review of research literature on textbooks and student learning.
 - 4.89 Develop and pilot test a continuous assessment system tightly linked to the curriculum, with teachers actively involved in the process.
 - 4.90 Train trainers and pilot test a continuous assessment workshop for teachers.
 - 4.91 Attempt to deal with the issues of royalties, honoraria, and publisher accountability, perhaps contracting for a study of the role and influence of publishers in the Southern Africa Region.
 - 4.92 Hire one or two full-time editors.

5. JSEIP and Preservice Teacher and Inservice Teacher and Administrator Education

Perhaps the major problem of Teacher Education in Botswana is that we have no underlying philosophy.

MCE Administrator and Faculty Member

Introduction

Teacher Education can be seen in four basic philosophical approaches or paradigms as to their design and functioning: the "Teaching-Craft, Apprenticeship; the Humanistic; the Behavioristic; and the Inquiry." Botswana, as seen through the Molepolole College of Education, is no exception in following the first model. Whether the model has or will continue to serve Botswana well is frankly based on one's philosophical perspective.

Teacher Education is both complex and controversial in the final decade of the twentieth century. It has become a battleground between theory and practice, process and product,

subject matter and pedagogy, and action and reflection, to name but a few of the many tensions. The philosophical battle has yet to be joined in Botswana, but with the major differences between the curricular and broader educational philosophies extant in the primary, junior secondary, and senior secondary schools, it cannot be put off much longer. A unified basic education will be in name only, without decisions on an underlying teacher training philosophy.

- 5.1 Molepolole College of Education: JSEIP's contribution to Molepolole College of Education has been profound and positive, if not as all pervasive as at the CD&E. The two current and previous RTA's have played pivotal roles as administrators, curriculum developers, teachers, supervisors, workshop coordinators, and laboratory designers. The respect in which they are held is indicated by their current Chairs of departments and chairs of many major college-wide committees. They are seen as major catalysts in the successful start-up and current reform efforts at the College.
- 5.2 Preservice Education Recommendations: Preservice education has the following short- and long-term needs.
 - 5.21 Agreement on a basic philosophy, or the decision to experiment with more than one.
 - 5.22 Involvement of MCE and other teacher educators in the curriculum development and in-service process.
 - 5.23 Designation of counterparts for the next fifteen months, and the identification of possible counterparts under BEC.
 - 5.24 Clarification of requirements for entrance into MCE.
 - 5.25 Clarification of requirements to become a teacher at MCE.
 - 5.26 Movement towards greater Botswana leadership and teaching.
 - 5.27 Assistance to Tonota to establish it on sound grounds.
 - 5.28 Send the Acting Principal to the U.S. for short-term visit and training.
 - 5.29 Begin the in-service training for the faculty.
 - 5.30 Begin a demonstration night school for dropouts or those not accepted into senior secondary.
 - 5.31 Create an internship program to meet shortage of Botswana teachers at CJSS.
- 5.4 Inservice Education: The exciting Education Centers, as well as the new Department of Teacher Education and the existing Department of Secondary Education, have also been well served by JSEIP RTAs. They have played key roles in developing handbooks for administrators and writing the rules and regulations govern-

ing the secondary schools. Their many inservice workshops for teachers and administrators have been well received, and they have been key catalysts in institutionalizing the inservice role for Field Education Officers.

- 5.5 Inservice Education Recommendations: The following recommendations on inservice education are offered in the hopes that they will further the development of this critical area.
- 5.51 Placement of FEOs immediately into the DTE.
- 5.52 Work with the planning office on housing for FEOs.
- 5.53 Develop a plan to fill subject matter and regional slots with FEOs.
- 5.54 Officially adopt rules and regulations governing secondary schools.
- 5.55 Continue offering of workshops and seminars.
- 5.56 Open and staff of the rest of the Education Centers.
- 5.57 Hold a National Conference on In-Service Education.
- 5.58 Develop of a self-study and accreditation procedure for junior secondary schools.
- 5.59 Create a Curriculum Coordinating Council.
- 5.60 Establish the National Council for Teacher Education.
- 5.61 Contract for an analysis of the implications of recent research on student learning for teacher training.

6. Research

In spite of the overwhelming number of tasks to be done in a new organization and with the rapid expansion of the system, JSEIP staff and CD&E counterparts have carried out a surprising number of high-quality research and evaluation projects.

JSEIP Evaluator

Introduction

A major contribution of JSEIP has been the advancement of educational research in Botswana. While the institutionalization and organization of the research effort has a long way to go in the country, JSEIP RTAs, short-term consultants, and several Botswana have been actively involved in on-going research. This has resulted in several publications, the commitment of the International Journal of Education Research to publish a complete issue on Botswana, the recent publication of Curriculum in the Classroom (1990) and a second book Influences on Quality Instruction, scheduled for publication in 1991. Given the many other tasks confronting JSEIP, the amount and quality of research is exceptional, and makes an extremely valuable contribution to the further capacity building and organizational development of the MOE.

7. Lessons from JSEIP for BEC

We very much want continuity of both educational philosophy and personnel from both JSEIP and PEIP to the BEC Project.

MOE Officials

Introduction

With ten years of experience with PEIP and five years experience with JSEIP, the MOE impressed upon the evaluation team the need to maintain continuity in personnel and philosophy. Both the current projects have a deep understanding of the cultural context, and have developed positive personal and professional working relationships throughout the MOE.

In a sense, all of the suggestions and recommendations we have made come from the JSEIP experience. Rather than repeat all of them, we will bring to the fore those which appear to be most critical for the successful functioning of any future project. These lessons come from both the successes and difficulties encountered by JSEIP and are neither unique to the project nor meant as an implied criticism of it.

We recommend the following considerations for BEC and any future projects.

- 7.1 **Local Input:** Projects must be designed with major local input and have the clear understanding and firm commitment of the GOB/MOE.
- 7.2 **Contextual Understanding:** Contextual understanding and needs assessments must precede project design and development.
- 7.3 **Clearly Focused:** Projects must be clearly focused, but contain flexibility to meet changing needs and circumstances.
- 7.4 **Expectations and Time Lines:** Realistic expectations and time-lines are preferable to one's which might be appropriate in another context, but which only lead to frustration and negative evaluations in this context.
- 7.5 **Organizational Structures:** Simple organizational structures are preferable to complex ones and simple reporting lines to multiple ones in structuring the project within U.S and GOB bureaucracies.
- 7.6 **On-site Administrative Control:** On-site administrative control by the project over personnel and other matters is preferable to other models.
- 7.7 **Linkages:** Strong linkages among MOE departments, involving both Project expatriate staff and MOE personnel should be in place for the system to function to its fullest capacity.
- 7.8 **Shadow Posts:** As Botswana become qualified to fill regular posts, expatriates should be reassigned to shadow posts, thus promoting Botswana into positions of authority and stature.

- 7.9 Advisory Group: A high level advisory group to the project which meets regularly would facilitate keeping the project on track and alleviate problems before they reach crisis stage.
- 7.91 Consultants: A clear explication and even training of short and long-term consultants on the difference of interventionist strategies vs. catalyst for change strategies.
- 7.92 Public Information: Public information and public relations on a projects' goals and accomplishments is critical throughout the life of a project.
- 7.93 Team Functioning: A careful balance must be struck between building a "well functioning project team" and building a "separate culture." The Chief of Party role becomes absolutely critical in maintaining project focus and positive working relationships, working with local MOE officials, and administering the details of the project. Recent /SEIP leadership has been better able to maintain this balance.
- 7.94 Relationships with Other Donors: It is critical that any project work closely with other donor agencies.
- 7.95 Curriculum Diffusion and Implementation: Diffusion and Implementation are critical to any curriculum development project and must be built into the original project design.
- 7.96 Continuity of Personnel and Philosophy: To the extent that there is not continuity of philosophy or personnel from previous projects to BEC, a substantial period of time should be allocated to familiarization of project staff with Botswana and of MOE personnel with project purposes and RTAs.

I. INTRODUCTION

Overview

The Junior Secondary Improvement Project (JSEIP) is one of two major educational improvement projects in Botswana at this time. The Primary Education Improvement Project (PEIP) is now completing ten years of work at the University of Botswana, founding the Department of Primary Education and working in the inservice arena with primary teachers. JSEIP is completing five years of educational reform work, with an emphasis on the curriculum at the Junior Secondary level, but also including educational planning, the development of Molepolole College of Education to train Junior Secondary teachers, and capacity building in the Departments of Secondary and Teacher Education to inservice teachers and administrators.

The Current Evaluation

This report results from an evaluation of the JSEIP performed for the United States Agency for International Development (USAID/Botswana) between August 13 and 31, 1990. The Evaluation Committee was composed of two contract evaluation specialists from Multi-Services International, Inc. of Washington, D.C., an evaluator from the University of Pennsylvania, representing Florida State University (the Prime contractor for JSEIP), a representative of the Curriculum Development and Evaluation Department (CD&E) of the Ministry of Education (MOE) of Botswana, the Human Resources Development Officer (HRDO) of USAID/Botswana, and the Deputy Director of USAID/Botswana. (See Appendix A for listing of names and titles). This report was prepared by the Evaluation Team composed of the three external members of the committee.

Purposes

The present review and evaluation is the second of two scheduled formal evaluation studies. The first was a Mid Project Evaluation of the formative type of March 1988. Because this review and evaluation was scheduled to begin about 17 months before the end of the project, it was commissioned to serve three major purposes, as follows:

1. To review and evaluate project progress to date in view of its current objectives and time line. In this respect, this study serves as a summative evaluation to date.
2. To review and evaluate current project operations and plans as they related to current project objectives and time line, with a view to forming recommendations about the future course of the Project for the remaining 14 operational months. In this respect, this study serves as a formative evaluation of project operations.
3. To review and analyze (a) project plans, objectives, operations, and progress over its entire life span of almost five years, (b) the policy, cultural, and educational contexts in Botswana in which the project functioned, and (c) the constraints on

project development and operation according to original plans, all for the purpose of identifying lessons learned of significance to the detailed planning for a potential new project to succeed and carry on some of the work of JSEIP and PEIP.

As is readily apparent from the above purposes of the present review and evaluation of JSEIP, this work is not a standard summative evaluation of project accomplishments, and the Report represents a blending of findings and judgments relevant to all three purposes defined above. (See Appendix B)

Method

The method employed in the present review and evaluation was for three external consultants, formerly unfamiliar to each other, to assemble together in Gaborone, Botswana, for a three week period. During this time, we conducted numerous interviews with persons knowledgeable about various aspects of the Project and its context; reviewed a large amount of project, USAID, and Government of Botswana documents relevant to the project; assessed, discussed, and integrated this material; drew conclusions; and wrote this report. The assessments and recommendations made are based upon our understanding of (a) the functioning of the Project in its context, (b) the performance of somewhat similar education development projects elsewhere, and (c) sound, responsible, and feasible educational practice under similar circumstances. Thus given the nature of the review and evaluation reported here, it is clear that the authors did not have an opportunity to conduct original evaluative research on which to base its judgments, nor did it base its judgements on evaluative research completed and reported by others.

More specifically, the Evaluation Team (a) interviewed JSEIP staff, USAID representatives, members of the Primary Education Improvement Project (PEIP), Government of Botswana (GOB) officials, and classroom teachers, (See Appendix C) for complete listing of persons interviewed and site visits), (b) reviewed reports, publications and curriculum materials, (See Appendix D) for complete listing), and (c) visited several schools, colleges, the University of Botswana (UB), and an education center in the development of its observational and informational base for preparing this report.

Background

Following an assessment in 1977 of the state of public education in Botswana by the National Commission on Education (NCE), the Government of Botswana (GOB) adopted a broad-based plan for development of its national education system. In 1979, the NCE assessed progress made in the implementation of the plan adopted. Thus, there has been definite initiative originating in Botswana to study and improve its education system.

More recently, a set of education system assessments was conducted by the Ministry of Education (MOE) in conjunction with an international project entitled Improving the Efficiency of Educational Systems (IEES) - a multi-national project funded by the United States Agency for International Development (AID/Washington). The initial report entitled *Botswana Education and Human Resource Sector Assessment* (1984; updated in 1986, with

an addendum in following years) pointed clearly to the need for concerted effort to develop rapidly Botswana's Junior Secondary Education System. Accordingly, the scope of the Junior Secondary Education Improvement Project (JSEIP) was based upon the IEES education and human resources sector assessment, and the general requirements of Botswana's National Development Plan 6 (NDP6), which applied to the years 1985-1991.

Planning for JSEIP culminated with the completion of the Project Paper under the auspices of USAID/Botswana in December 1984. A joint USAID/GOB junior secondary development project was agreed to in April 1985, with JSEIP operations commencing in late 1985.

Historical Overview: JSEIP

Project Framework and Funding

Planning for JSEIP was initiated by the USAID Mission to Botswana in collaboration with the Government of Botswana in 1983. The Project Paper was completed and approved by USAID/Botswana in December 1984, and was then submitted for approval to the Bureau of Science and Technology/Office of Education of AID/Washington. Although the proposed six operational years for JSEIP were reduced to five by AID/Washington, the project was otherwise approved in early 1985. A major portion of the project (basically technical assistance and training) was contracted to the Learning Systems Institute of Florida State University (FSU) as a buy-in to the ongoing IEES project funded by AID/Washington. This buy-in, which was executed as Task Order Number 03 to the IEES contract, provided for an estimated \$9,203,959 in AID funds for these purposes over the period September 13, 1985, through September 12, 1990. The IEES and JSEIP projects were contracted to FSU on behalf of a consortium of institutions composed of FSU, Howard University, University of New York (Albany), and the Institute of International Research.

In addition to the IEES buy-in component described above, the JSEIP project included other components to be provided directly by USAID/ Botswana (basically equipment acquisition and facility construction) and by the Government of Botswana (basically technical services, training, commodities, construction, and maintenance). The "Project Grant Agreement Between the Republic of Botswana and the United States of America for Junior Secondary Education Improvement" signed April 19, 1985, specified these mutual commitments. This Agreement committed USAID to a \$16,318,000 contribution over the five-year project period (of which \$9,203,959 was allocated to the IEES buy-in with FSU), while the GOB committed \$6,193,000 as its contribution to JSEIP. Total project funding for five years was therefore \$22.5 million. This amount was increased by \$1.2 million in USAID grant funds to the GOB by agreement of August 27, 1985, resulting in total JSEIP funding of \$23.7 million.

A major modification to these JSEIP contractual agreements in the form of a "Project Implementation Order for Technical Services," or PIO/T, was executed by USAID Botswana on April 27, 1990. It provided for a no-cost extension of JSEIP from September 13, 1990, to on or about December 15, 1991. The PIO/T resulted in a new buy-in contract with FSU, in

the form of Task Order Number 02 under IEES-II, for continuation of its role in JSEIP through 1991, and therefore supersede the the previous task order effective in 1985. The period covered by the PIO/T was June 1990 through December 1991, and specified a revised set of project objectives which, by virtue of being embodied in Task Order Number 02 to IEES-II, became the operative objectives for the FSU component of JSEIP. It provides for a total estimated expenditure of \$2,464,000 for the 19 month concluding period. Thus, in essence, the total project period was extend by 15 months (in addition to the five years that had originally been approved by AID/Washington), but without additional cost.

The extended total project period of 6 years 3 months is therefore equivalent to the 6 year project initially proposed by USAID/Botswana in 1984. Since total expenditures under the original task order from September 1985 through April 1990 approximated \$6.3 million, the total estimated expenditures through December 1991 approximate \$8.8 million. This is \$0.5 million less than the approximately \$9.3 million estimated costs for the five-year buy-in contract formed between USAID and FSU in 1985. This project component has obviously not been subject to cost over runs.

Initial Purposes and Performance

In short, the initial purposes of JSEIP were "To increase the quality and efficiency of the expanded basic junior secondary education system and to institutionalize the capacity of the MOE to develop, manage, and support the junior secondary education system" (pg. i, JSEIP Project Paper of 12/13/84). Contract project personnel were intended to promote these purposes by assisting and working in collaboration with MOE personnel, rather than by assuming primary responsibility and by taking direct action. Three components, as defined in the Project Paper, were envisioned to accomplish these purposes with a focus on the to-be-revised junior secondary level curriculum, as follows:

1. Curriculum and instructional materials development, including development of correlated achievement measures.
2. Teacher development entailing development and implementation of preservice and inservice teacher training programs consistent with the revised junior secondary program, thereby leading to implementation of the revised curricula.
3. Education systems planning, management, and supervision, entailing (a) developing the organizational structure with trained staff for the system, (b) developing and coordinating needs analysis, dissemination, and managerial components of the system, and (c) training workshops for inspectors, education officers, and headmasters.

These project components were elaborated in the Logical Framework (Annex B to the Project Paper) which specified a number of end-of-project goals, purposes, observable outputs, and indicators thereof. The anticipated outputs specified here were incorporated into the JSEIP implementing documents providing for the USAID/Botswana grant to GOB and the contract with FSU. Briefly stated, the procedures designed to achieve the intended outputs were (a) extensive technical assistance by the JSEIP team of resident technical advisors (RTAs) and consultants, (b) advanced training in education of local personnel in institu-

tions of higher education in the United States, (c) acquisition and installation of state-of-the-art instructional technology, (c) construction of facilities supporting the Curriculum Development and Evaluation Department of the MOE and several (inservice) Teacher Education Centers, and (d) a comprehensive mechanism for monitoring educational quality and evaluation. Taken as a whole, JSEIP represented a remarkably-ambitious comprehensive educational development effort at the junior secondary level by attempting to simultaneously integrate a systematic instructional design strategy with the national educational system at the school, teacher training, and ministry levels.

As indicated, the Project Paper of December 1984 defined a comprehensive, complex, highly-integrated process designed to develop and implement a revised junior secondary curriculum nationally, to develop preservice and inservice teacher and inservice headmaster training in support of curriculum implementation, and to develop organizational structures and capacity (in terms of personnel and commodities) of the MOE to promote and sustain these objectives. The Paper also provided in Annexes K and L a detailed time-phased plan of concrete actions the project was to undertake in curriculum and instruction development and in inservice teacher training. The project was to start rapidly in the first six months, to complete a great deal of the development work by the end of the third year, and to implement the revised curriculum, along with inservice teacher training, during the fourth through the sixth project years.

The rapid project development pace envisioned for JSEIP tacitly assumed that key MOE units (*viz.*, the Curriculum Development and Evaluation Department, the Secondary Education Department, and the Molepolole College of Education) were adequately organized, staffed, and functioning to absorb as of September 1985 a complex, highly-technical, high-intensity and intricately-coordinated instructional development program supported by the infusion of state-of-the-art educational technology and a substantial number of foreign full-time technical advisors and highly-skilled consultants. The actual course of JSEIP during the first two to three years indicate that this major assumption about the existing MOE capacity for rapid project development was not warranted. Furthermore, the project plan did not provide for an initial phase of (a) staff development in project purposes and methods, (b) rapport building between MOE personnel and the foreign technical personnel who were to collaborate closely, and (c) acquisition and training in the new computer technology which was to support much of the curriculum development work of the project. In retrospect, these ground-laying functions seem to have been essential, and to have been partially accomplished through the actual course of project activities during the initial years.

Upon initiation of JSEIP, eight Resident Technical Advisors were brought in by the FSU consortium during the first few months. Two were placed in the Department of Curriculum and Evaluation, four were assigned to the Molepolole College of Education (MOE), one was assigned to the Department of Secondary Education, and the Chief of Party (COP) was attached to the MOE's Planning Unit. Because these units were underdeveloped and understaffed in relation to their ongoing responsibilities, the expertise and energy of these Advisors was apparently co-opted immediately by the urgent operational needs (of a rapidly expanding junior secondary system) of the units to which they were attached. For example, JSEIP

personnel at MOE were used to teach courses (some full-time), and the COP provided major and valued staff support to the immediate functions of the Planning Unit. As stated by Snyder (1987) from a report of a JSEIP internal evaluation:

It was perhaps inevitable that a project designed to assist in development would become involved with the operational activities integral to system maintenance. A large part of the JSEIP project can in fact be seen as responsive to immediate needs within the ministry, reactions which the project hopes can later be rationalized within its broad purposes.

The Snyder (June, 1987) report and a JSEIP (February, 1988) report describe project activities and accomplishments as seen by the RTA staff. Another internal evaluation (a team composed of one representative from FSU and one from SUNY, Albany) was undertaken in June 1987, and a summary of project accomplishments to date was presented in their draft report, along with a discussion of the constraints impeding full realization of the rapid project development originally envisioned (June, 1987).

The three documents cited above can be reviewed for detailed information about reported project activities and accomplishments during the initial two years. For our purposes here it is sufficient to recognize that JSEIP did not get off to the rapid start focused on curriculum development and related tasks envisioned in the Project Paper for a variety of contextual and management reasons. In addition to the extensive maintenance functions performed for the MOE, much was accomplished in establishing the infrastructure for JSEIP and in developing a collaborative FSU/University of Botswana participant training program (thirteen students were enrolled during the second project year, and a second group was set to begin). As a consequence of these two internal evaluations, a three-person Project Management Committee of RTAs was constituted to oversee the technical assistance (i.e., FSU) component of the project, to develop a revised work plan, and to conduct job evaluations of JSEIP RTAs. Both were accomplished by late 1987, and detailed job descriptions were developed which were oriented more toward project objectives than were the roles that had evolved in practice.

The USAID/Botswana grant to GOB for JSEIP also provided for joint funding of the acquisition of commodities and the construction of several buildings. By the end of 1987, a wide range of instructional and office equipment and furnishings had been acquired, and a fine new building to house the CD&E had been occupied. Construction of six planned new Education Centers, however, lagged behind schedule. Only one of the six planned had been completed by the end of 1987. Construction of five of these centers nonetheless continues, though at a slower pace.

Mid Project Evaluation: 1988

In accordance with prior plans set forth in the JESIP grant to the GOB, USAID/Botswana commissioned a mid-project evaluation in early 1988. The firm of Louis Berger International, Inc., of Washington, DC, was retained to conduct this evaluation. The final report dated March 1988 was submitted early the following month. In general, the reviewers

found (a) that development of JESIP functions as planned was well behind the time lines initially established, (b) that planning assumptions about the capacity of MOE to support and participate in JSEIP were invalid, (c) that there was considerable misunderstanding among the several major parties to the project about its functions and methods, and (d) that the project had made significant contributions to the development of MOE and to educational planning, and the participant training program had been launched.

In summary, the key recommendations contained in the mid term evaluation report were (a) that JSEIP should continue in accordance with its basic purposes, (b) that all parties to JSEIP should develop a revised work plan, (c) that special efforts should be made to communicate clearly, especially to MOE personnel, project purposes and methods, (d) that support for students in the participant training program should be increased, (e) that the management of the technical assistance (i.e., FSU) component of JSEIP should be assigned to someone on a full-time basis, and (f) that a number of improvements should be made in project management processes. As will be described in the following section, the essence of these recommendations were accepted and acted upon during the ensuing year.

Project Development: Mid-1988 to Mid-1990

As recounted in detail in JSEIP progress reports (fifth through eighth), the two-year period following the mid project evaluation was one of substantial redirection and rapid development, in spite of numerous contextual constraints. One of the first priorities, following the appointment of a new full-time project COP in January 1988, was to disseminate information within MOE about JSEIP purposes and methods. This was done by a variety of means, including the publication and wide distribution of a booklet entitled *Junior Secondary Education Improvement Project: Enriching the Tradition of Educational Development in Botswana* (1989). In summary, some of the major developments during this period were as follows:

1. Project planning was integrated more with MOE planning, especially with that of the Curriculum Development Unit and the Research and Testing Center, both of the Department of Curriculum Development and Evaluation. JSEIP personnel resources, both RTAs and consultants, were focused more on curriculum and test development, field testing, and evaluation. A large amount of curriculum development work, and some test development work, was accomplished during this period.
2. Linkages were developed with the Peace Corps in Botswana which resulted in accelerated development of the art curriculum, and to monitoring the trial implementation of the new English curriculum.
3. JSEIP initiated an educational research program directed to producing a better understanding of education in Botswana and which would be of value in the forming of policy and management decisions about educational development.

In addition to the intensified focus on curricular development, along with associated functions such as materials production and testing, JSEIP RTAs continued to provide extensive and valued support to the development and maintenance functions of the MCE and the

DSE. In all, JSEIP RTAs continued to be directly responsive to a variety of pressing maintenance needs of several departments of the MOE, while moving more vigorously on the need to develop and implement the JC curriculum (as originally envisioned in the 1984 Project Paper) which was, of course, the pressing priority of the CD&E.

Project Refinement and Extension: Mid-1990 to Dec. 1991

After about four operational years (1986 through 1989) of JSEIP, USAID/Botswana and GOB agreed to a significant refinement of purposes and a no-cost extension of the Project from September 1990 through December 1991. The original purposes were refined to focus more specifically on "the new instructional component" of the expanded junior secondary education system, as contrasted with the prior more broad-based capacity building approach to the development, management and support of the JC system. The PIO/T also added a research function to the MOE capacity-building purpose as it related specifically to the new JC instructional component. These refinements were specified in PIO/T which became effective June 1, 1990, and were binding upon USAID, GOB, and FSU (which continues to provide technical assistance personnel and participant training). This document stated that "JSEIP will focus on the instructional components of the junior secondary system, including curriculum and materials development and permanent organizational capabilities for the continued support and improvement of instruction in the junior secondary schools" (pg. 3). Seventeen specific and expected outputs were defined which gave more concrete meaning to these project refinements. A new time line for JSEIP was also provided (pg. 11-12). Since the original 1984 purposes and outputs, as such, were not incorporated into the PIO/T, these refined purposes, outputs, and time line provide the current direction and expectations for JSEIP, and form the basis upon which its effectiveness should be judged.

The PIO/T also specified a significant management change for JSEIP. As in the 1985 project grant document, USAID devolved day-to-day operational responsibility to MOE. However, whereas the 1985 document specified that the Project would be coordinated for MOE by the Chief Education Officer of the Department of Secondary Education, the new 1990 PIO/T specifies that this responsibility is assigned to the Chief Education Officer of the Department of Curriculum and Evaluation. This shift reinforces the redirected project focus to curriculum development.

The extension of JSEIP through December 1991 was intended to accomplish several ends. First, more curriculum development work could be accomplished with an extended time period. Second, a sister project also funded by USAID, the Primary Education Improvement Project (PEIP), was scheduled to complete ten years of operation at the end of December 1991. By extending JSEIP to that date, both projects would conclude at the same time, and a new project under development, the Basic Education Consolidation project, was designed to continue curriculum development and related work at the basic education level (standards 1 through 9) commencing January 1, 1992. The last 19 months of JSEIP operations, as provided for by the PIO/T, can be viewed as a phase-out period since the number of RTAs and consultants gradually diminish in number. By the end of September 1991, only three RTAs are scheduled to remain to see the project to conclusion for the last three months ending in December.

JSEIP Organization, Context, and Constraints

Project Organization

As indicated above, JSEIP was a joint project of USAID/Botswana and the GOB, with both parties providing substantial funding for personnel, training, commodities, construction, and support services, with the basic purposes of increasing "the quality and efficiency of the expanded basic junior secondary education system and to institutionalize the capacity of the MOE to develop, manage, and support the junior secondary education system" (Project Paper, 12/13/84, pg. i). In outline form as taken from the April 1985 USAID grant document to GOB for JSEIP, the project was structured as follows:

USAID CONTRIBUTIONS (Thousands)

<i>(Item)</i>	<i>(Cost)</i>	<i>(Notes)</i>
Technical Assistance	\$ 6,935	Contracted to FSU
Training	1,818	Contracted to FSU
Commodities	1,271	Partial Contr. to FSU
Construction	2,210	60% of Cost
Support Services	140	
Contingencies	3,944	
Total Cost	\$16,318	

GOB CONTRIBUTIONS (Thousands)

<i>(Item)</i>	<i>(Cost)</i>	<i>(Note)</i>
Technical Services	\$ 420	
Training	1,240	
Commodities	371	
Construction	1,841	40% of Cost
Operations and Support	814	
Contingencies	1,507	
Total Cost	\$ 6,193	
TOTAL PROJECT COST	\$22,511	

For the most part, the plan was for USAID to provide technical services and training through contract with the FSU Consortium and to provide funds for commodity acquisition (furnishings and equipment) and facility construction, all in support of the project. GOB in turn was to provide its share of funds for commodity acquisition and facility construction, and for the following wide array of project support services: MOE staff counterparts for RTAs provided by FSU; housing for the resident personnel; international travel and allow-

ances, salaries and inservice courses for Batswana training participants; and maintenance and repairs of project buildings, vehicles, and equipment.

Under this organizational arrangement, a smoothly functioning project was dependent upon (a) the separate abilities of USAID, GOB, and FSU to perform on their commitments to JSEIP, and (b) the abilities of the three parties to collaborate effectively, and on a timely basis, with each other in the performance of their respective roles. By agreement between USAID and the GOB, the MOE assumed day-to-day operational responsibilities for this complex project, which in turn agreed to assign coordination responsibilities to the Chief Education Officer of the Department of Secondary Education. In all, the GOB assumed the major authority over and responsibility for the functioning of JSEIP.

The central operational component of JSEIP, as distinguished from the commodity acquisition and facility construction components, was the functioning of the group of RTAs and expert consultants supplied by FSU, in collaboration with their planned local counterparts and selected MOE professional staff. The organization of the RTA group therefore represents a major facet of the organization of the JSEIP as a whole (which was presented in the preceding paragraphs). This group was led by a designated Chief of Party (COP). It is fair to observe, however, that the RTAs have, for the most part, functioned as a loosely coupled group of individuals, as contrasted with a highly integrated and cohesive team with a common, narrowly-defined focus (i.e., such as curriculum development). As previously indicated, the RTAs were initially assigned to four different MOE units (CD&E, DSE, MCE, and Planning), and assumed work responsibilities of immediate high priority to these units. As such, they were unfamiliar with each other, physically separated, and working on different (and not closely related) tasks. Other than unfamiliarity, the physical separation and different work assignments have continued to a great extent to the present.

Team building, if desirable, would therefore have been difficult for these reasons, as well as for several others. First, it became apparent over time that RTAs were not particularly interested in building an integrated team structure, but rather preferred to concentrate on their various high priority tasks at the sites to which they were assigned. JSEIP management concluded that, under these conditions, a significant team-building effort would have run into resistance, would have caused disruption of some of the work in progress, and would have required an intensive effort on the part of many. The cost of team building was not perceived to justify possible benefits. Finally, a highly-cohesive and focused RTA team would probably have been viewed by many MOE personnel as unwelcome because locals would have been excluded (even if local counterparts were included, but this would not have been possible because, for the most part, these shadow positions were not filled), and RTA team loyalty might supplant primary commitment to the work of the unit to which each RTA was attached. Consequently, the RTAs have continued to function as a loosely coupled group, while oriented toward Project purposes and linked to each other through the JSEIP COP. Since this arrangement evolved following the Mid Project Evaluation, the work of RTAs has focused much more on Project objectives and much progress has been achieved. RTAs associated with the MOE and the DSE have also continued to work towards other high-priority objectives of the MOE unit to which they have been assigned.

Project Context

Within the JSEIP organizational framework described above, FSU professional personnel (i.e., the RTAs) were brought in under contract to perform technical roles according to a detailed plan based on Instructional Systems Design principles (i.e., the Project Paper, which was incorporated into its contract), but under the supervision of MOE which was not bound to the project plan (contained in the Project Paper) either by contract or by the conditions of its project grant award. The role of the RTA group was to assist and collaborate with MOE personnel (their planned counterparts and professional personnel) in the performance of the JSEIP work plan; they were not assigned primary responsibility and authority to proceed directly and unilaterally on project development as planned. The day-to-day supervision and coordination of JSEIP was assigned to the MOE, and hence RTAs assumed high-priority assignments in the MOE units to which they were assigned.

The MOE at this time was functioning under extreme pressure occasioned by (a) the rapid expansion of the junior secondary education system, (b) a major shift in junior secondary from three years to two years, (c) the recent establishment of MCE, and (d) by severe shortages of qualified professional personnel to manage and maintain these massive, rapid changes in the junior secondary education system. There was extreme pressure on MOE just to maintain its ongoing functions under these conditions, and RTAs brought in under JSEIP were assigned duties predominantly in support of these functions. Furthermore, JSEIP as conceived, was a comprehensive, complex, highly-integrated, high-technology, and intricately-coordinated project, and its purposes and methods were poorly understood initially by MOE personnel. Under these conditions, it is not surprising that the results of the Mid Project Evaluation found that "the various organizational entities and people involved in and with JSEIP have differing perceptions or expectations of what the project should be doing" (pg. 7).

Contextual Constraints to JSEIP Development

The documentation reviewed in the preceding "Historical Overview" section indicated clearly that JSEIP did not develop strictly in accordance with the Log Frame and time line set forth in the Project Paper. The Paper served instead as a very broad framework, and was understood in different ways by the various parties involved in JSEIP. In this section, we examine briefly the major reasons why JSEIP did not develop according to plan.

JS Expansion Pressure.

The major consideration explaining the course of JSEIP development was the context of education in Botswana and in the MOE at the time JSEIP was initiated. As previously indicated, junior secondary education was undergoing very rapid expansion simultaneously with a reconceptualization (from a three year curriculum as part of secondary education to a two year curriculum potentially as the upper level of basic education) of its place in the educational system. These facts brought great pressure on MOE to manage the expansion and transition, while being seriously understaffed in its professional ranks. Similarly, MCE had recently been established (1984), and was being depended upon to produce immediately

substantial numbers of new JS teachers before it was fully staffed with qualified faculty and before it had opportunity to develop its teacher training curricula. Upon the appearance in late 1985 of RTAs under JSEIP, these trained professionals were placed immediately in high-priority system maintenance roles, instead of being directed into project development tasks along with their planned MOE counterparts (which had not then been appointed). Consequently, JSEIP development, as planned, was delayed by the urgent needs for skilled personnel.

MOE Readiness.

Another contextual factor which constrained JSEIP development as planned was the unfamiliarity with JSEIP purposes and methods by MOE personnel which had been assigned the day-to-day responsibility of coordinating the project. As previously indicated, the rapid development pace envisioned for JSEIP assumed that key MOE units were adequately organized, staffed, and functioning to absorb as of September 1985 a complex, highly-technical, high-intensity, and intricately-coordinated instructional development program supported by the infusion of state-of-the-art educational technology and a substantial number of foreign full-time technical advisors and highly-skilled consultants working in a supportive role to MOE personnel who held primary responsibility. The actual course of JSEIP development indicated that, as of the mid-1980s with the rapid expansion and transformation of the JS education system, this major presumption was simply invalid. Because MOE, the primary agent, was not ready to absorb JSEIP as planned and was not under contractual obligation to do so, its development took a different course determined by the immediate needs of MOE to develop and sustain the JS education system.

Secondary Constraints to JSEIP Development

In addition to these contextual factors which played a major role in setting the actual course of JSEIP development, there were a number of other, but less critical, constraints on the development of JSEIP as planned. These secondary factors are mentioned here with the intention that their identification might provide some useful guidance in the future development of JSEIP and of future projects such as the BEC, and not with the intention of affixing "blame" for JSEIP not to develop as envisioned in the 1984 Project Paper.

USAID/FSU Organizational Constraint.

One set of further constraints to JSEIP development involved USAID and its FSU contractor. From programmatic and fiscal perspectives, the major agents involved in JSEIP included, in addition to the GOB, USAID/Botswana, AID/Washington, FSU (and the consortium institutions), and the government bureaucracy of the State of Florida (since FSU is a state university). It has been reported that all these layers of administration of USAID grant funds (supporting almost three-quarters of the JSEIP budget) have resulted in complexities and serious delays in implementing decisions (technically, recommendations) made locally about desirable project actions and revisions.

Constraint on Planned Staff Turnover.

Secondly, the technical assistance component based on RTAs and expert consultants, provided under contract by FSU, brought to Botswana, for the first time, a group of professionally trained and experienced individuals, most of whom had not worked together before and some of whom had not worked in contexts similar to that of JSEIP. Under these conditions, it is to be expected that some of these staff members would function better in their roles than others. There appear to have been significant constraints on FSU to develop a highly-functioning integrated team RTAs through what is normally planned turnover of personnel. Consequently, the constructive impact of this group of RTAs may have been less than would otherwise be the case had it been possible to develop, through planned turnover, an even more capable team. In any event, this constraint on FSU partially accounts for JSEIP to develop in directions other than that envisioned in the Project Paper.

MOE Organizational Constraints.

In addition to the constraints noted above, several constraints on JSEIP development attributable to the GOB should be noted. The first set to be noted concerns organizational matters. To begin, the assignment of some JS curriculum development authority and of teacher inservice training authority to the DSE has not been optimally supportive of project purposes. We understand this constraint is being addressed since MOE policy has now been established to assign all JS curriculum development authority to CD&E and to assign all JS inservice teacher education authority to TED, and that this policy is in the process of being implemented.

Another organizational constraint is the difficult and limited access by the CDU to selected JS schools for conducting needs assessments preliminary to the development of improved curricular materials. A related organizational constraint has been the exclusion of relevant RTAs from participating in the curricular decisions of the subject matter panels which have authority over such decisions. These panels quite appropriately are composed of a wide range of relevant local education professionals, and should so continue. However, relevant RTAs might also be included in panel discussions as ex officio members, or as participating consultants.

The final organizational constraint to be noted is the timely creation of appropriate "posts" in the MOE personnel structure to which RTAs can be appointed, and of the creation of other needed posts to be filled by Botswana. At project outset, it has been reported that the assignment of RTAs to various MOE units was not entirely according to plan because "posts" they were intended to fill did not exist in some of the planned locations. For example, four RTAs were assigned initially to MCE, a number well in excess of that originally envisioned. We have heard reports that the allocation of appropriate "posts" may again become a serious problem upon the planned start-up of BEC on January 1, 1992. If so, this should be anticipated and resolved well in advance of this date.

MOB Support Constraints.

The second set of GOB-based constraints is that certain support personnel and services to be provided by the GOB were not forthcoming as planned. Of greatest importance, perhaps, was the difficulty in recruiting qualified Batswana into the shadow counterpart positions to the RTA posts. Even today there are few counterparts prepared to assume the RTA posts upon the gradual departure of RTAs over the coming 16 months. Furthermore at the early stages of project development, GOB was unable to provide sufficient funds for international travel and allowances for individuals selected for participant training, or to arrange for adequate and timely repair of high-tech office and instructional equipment and of project vehicles.

Job Classification Constraint.

The final constraint on JSEIP development, to be mentioned here, is the MOE Job Classification Exercise of Mid-1988 which down-graded many staff positions and salary levels to the point where recruitment and retention of qualified personnel has been seriously impaired. Insofar as JSEIP has been affected, this Exercise has impacted especially negatively on the attractiveness of the shadow counterpart positions (to RTAs) to the point where few have been recruited, and, of those that have been, some plan to leave soon for other jobs. The establishment of sufficient posts for professional personnel in the MOE, and the recruitment to, training of, and retention of able Batswana in these posts is of great importance to the productivity of JSEIP, and of the entire MOE for that matter.

II. ORGANIZATIONAL ISSUES

Educational Policy

The organizational problems we see arise more out of consensual pressure for rapid expansion and modernization than out of fundamentally inconsistent models at the policy level.

Meyer and Nagel, 1989

Meyer and Nagel (1989) go on to state that unlike many other nations, Botswana does not suffer from "inconsistencies and ambiguities of policy." In fact, there appears to be a surprising policy consensus on almost all major issues concerning the educational system. There is a genuine commitment and deeply felt urgency to create a new and national educational system. The new system is committed to serving the whole nation; to being a universal system; and to bring about greater equality across genders, regions, strata and the rural/urban distinction. The new nine year basic education system is to be structurally unselective in form and highly participatory for community, parents and students alike. In addition, there appears to be a strong commitment that the educational system be modern and relevant to the lives of the Motswana individual and to the broader Botswana Society.

The educational system is not to be focused on a rigid tradition or arbitrary standards; it is to serve both individual and collective goods, and is to be relevant and continually adjusted to the needs of society.

Meyer and Nagel, 1989, 2

There appears to be not only horizontal consensus between interest groups, but vertical consensus between national elites and the local population on the new model. This consensus holds that education should be not only mass and equalitarian, but progressive and relevant. One can conclude that there is a strongly supported policy consensus, but that organizational problems continue to exist. It is on those internal organizational problems that directly affect the implementation of the universal Jr. Secondary program that we shall concentrate.

Organizational Issues Within the MOE

The expansion of the system has proceeded rapidly, accelerating dramatically about 1983...despite rapid expansion, achievement has remained stable across the decade of growth.

Ramatsui, 1990

Given the policy consensus, it is not surprising that the Botswana educational system has been going through rapid, even dramatic changes. By 1990, primary education was almost universal, and with twenty to thirty new junior secondary schools opening each year under

NDP6, that level is also moving towards universality. The sheer numbers and rapidity of growth, make some organizational and management concerns almost inevitable.

Ten Year Statistics and Projections

	1979	1988	2000
Primary Enrollment	152,543	248,415	368,865
Jr. Secondary Enrollment	14,165	32,897	64,171
Sr. Secondary Enrollment	2,551	7,640	26,791
Teacher Training Colleges	696	1,323	
Vocational-Technical	2,106	2,514	
Univ. of Botswana	860	2,837	

(Education Statistics, 1988 and Projections, 1990)

Given the rapid expansion of the structural elements of the educational system, it is not surprising that there are many inconsistencies between form (what is planned) and reality (what actually happens). All educational systems fall short of their ideals, and Botswana is no exception, but we would caution the reader of this report to keep in mind these quantitative achievements, while reading our suggestions on the qualitative improvements which might help the system.

Given the fact that this report is an evaluation of the JSEIP, and not of the whole MOE, we will concentrate only on the Department of Curriculum Development and Evaluation, the Department of Secondary Education as it interfaces with the CD&E, and the Department of Teacher Education.

The Organization and Structure of Curriculum Reform

The educational system is not to be focused on rigid tradition or arbitrary standard: it is to serve both individual and collective goods, and is to be relevant and continually adjusted to the needs of society.

Meyer and Nagel, 1989

We agree with Meyer and Nagel that crises in many parts of the educational bureaucracy can be left to "slower and decentralized processes of criticism and improvement," but that the process of curriculum reform is central to the task of building a modern, universal, national, relevant educational system. JSEIP has thus found itself at the core of the educational reform effort in Botswana, and its successes and failures have had and will continue to have a profound effect on the overall success of the reform effort. JSEIP, CD&E (particularly the CDU) have been at the vortex of the whirlwind of reform activities at a time when the JS system is doubling every ten years. That "impossible tasks were laid out, and difficulties or gaps in accomplishment were made nationally central, and difficult to delegate, decentralize, or render opaque," (Meyer and Nagel, 1989,4) does not relieve either JSEIP or the CDE from seeking to implement structural changes, so that rapid progress on the curriculum front might continue.

The MOE, in keeping with Botswana cultural traditions, emphasizes coordination and communication, rather than simple vertical authority. Vestiges of an older system left over from colonial days still exist: centralized authority and decision-making, established content, elite selection, testing, and inspection, but there can be little doubt that the developing model in Botswana is a more loosely coupled, decentralized, and equalitarian system than that found in most neighboring countries. The fact that Botswana is horizontally and vertically pluralistic and democratic, makes top-down, bureaucratic centralization inappropriate. The traditions of governance in Botswana lead towards functional specialization and more decentralization than is found in most African or other developing nations. A final factor affecting the organizational structure is the success of the government in gaining assistance from a wide range of international and national assistance programs. Many of these have led to specialized agencies within the MOE and have thus made it an organizationally complex institution.

Issue 1: Internal Organizational Development of the CD&E

The CD&E resulted from the merger of several pre-existing institutions and departments, each with its own history, role and power base. (See Appendix E for MOE/CD&E./JSEIP Organizational Chart). This has created a range of internal coordination problems, in addition to the need to coordinate with other departments-especially those of Teacher Education, Secondary and Primary Education. The CD&E has a wide range of difficult specialized tasks which need to be done for the whole system to keep functioning and for the reform movement to maintain its momentum. The four main tasks facing the department are: expansion, reorganization, revision and evaluation. What role the department plays in each of these four main tasks, along with a description of each division, is detailed in Meyer and Nagel (See Appendix). Suffice it to say that it is a highly complex set of tasks, and the CD&E finds itself in the middle of almost every major issue facing the educational system today. It is therefore not surprising that both the CD&E and the JSEIP have not always had smooth sailing during the eleven years since the department (CD&E) was organized and in the five years of curriculum development, supported by extensive external assistance.

Problems and Suggestions

With the diverse origins and wide range of tasks within the department, it is not unexpected that it is not a perfectly functioning unit. The following options, suggestions, or recommendations come from our observations and interviews, following up on the Meyer and Nagel (1989) and Nagel (1990) reports.

- Suggestion 1. Communications within the department appear to need strengthening. This could be done through more regular staff meetings and the regular publication of the internal newsletter. This is critical for the success of a project such as JSEIP, or in the future for BEC, as it is too easy for expatriates, not to mention nationals, to become isolated from each other.
- Suggestion 2. Lack of parallel structures and rank of leadership in the CD&E's various units makes links among the units difficult and communications infrequent.

Issue 2: Guidance and Counselling

Batswana do not go to strangers for counselling.

JSEIP Consultant and CD&E Staff member

There would appear to be disagreement within both the MOE and JSEIP on the role and functions of the G&C unit. On the one hand, there is the obvious need for the guidance and counselling function, particularly at the Jr. and Sr. Secondary school level, given the problems of job placement, alcohol abuse, testing stress, occupational planning, and family concerns. On the other hand, there are only two trained counselor educators in the country, and there are countless needs to be met in the schools. (See Appendix F, Rollins, 1990) for a detailed description of what a G&C program could look like.

Problems and Suggestions

- Suggestion 1. It is recommended that a policy decision be made soon to decide on the expansion of role and function of the G&C unit.
- Suggestion 2. A policy decision be made soon on whether to train a pre-service and in-service cadre of Guidance Counselors. This decision should also include their placement, salaries, etc.
- Suggestion 3. The G&C department in CD&E plays an important curriculum function, and a policy decision needs to be made as to its continued independence as a unit, or its inclusion as one of the units within the CDU. At the very least, the G&C unit needs close coordination with the CDU, RTC, EPU, and EBU, and to have its materials integrated into the 1-9 curriculum.

Issue 3: Materials Production

The CD&E has a wide range of materials production needs and thus a production unit was established within the department. Among the many production activities are the testing materials, trial curricular materials, and internal newsletters, to mention but a few of the many documents coming out of the department.

Problems and Suggestions

- Suggestion 1. Given that most of the materials production needs now come out of the CD&E, it would appear that a policy decision would be helpful on the continued siting of TAPU in Francistown. The distance of TAPU from the rest of CD&E complicates an already difficult problem of intraorganizational communication.
- Suggestion 2. The CD&E might undertake to expand its production capacity to meet the needs of products limited in scale (e.g. prototype curriculum and testing materials).

Issue 4: Relationship of CD&E with the DSE (Dept. of Sec. Ed.)

The CD&E is the sole department responsible for the curriculum.

MOE Officials and JSEIP Staff

In spite of agreement with the above statement by all MOE officials and JSEIP staff and a recognition of the issue for several years, the topic of who "controls" the secondary curriculum is still one of the major roadblocks to achieving the goal of curriculum reform at the secondary level. The issue is embedded in the history of the MOE and because it involves salary, job classification and prestige, it has not been an easy organizational issue with which to deal.

Problems and Suggestions

- Suggestion 1. There needs to be an interdepartmental arrangement between DSE and CD&E through the appointment of a *liaison person* whose main responsibility is to link the two departments.
- Suggestion 2. Arrangements need to be made between the two departments that permit routine communication with teachers and schools upon simple notification of relevant offices of the DSE. These communications become extremely important in not only the curriculum area, but also in testing, in-service, G&C, research and a range of other activities in which CD&E needs rapid and guaranteed access to classrooms, teachers and schools.

Issue 5: Organizational Concerns in the CDU

If the school is the body of the educational system and the teachers are its hands, then the curriculum is the heart and mind.

Nagel, 1990

The many issues involved in the curriculum are dealt with in detail in the next chapter. We shall highlight a few of the organizational concerns of the Curriculum Development Unit within the CD&E. While the CD&E and consequently the CDU reside at the center of the educational system, they are limited in their ability to coordinate and direct the activities of the other units within the educational system. The CDU has no direct staffing in the schools, the teacher training institutions, or the departments of primary and secondary education, who are responsible for administering the schools with which the unit must work. It therefore must work through the DPE and DSE to trial, evaluate and implement new curricula. Similarly it must work through the DTE and the teacher training colleges to conduct pre-service and in-service training for teachers in the new curricula.

Historically, the CDU did not have the staff to take over all the curricular functions, so that its curricular mission was nearly impossible to fulfill. It was dependent on the other actors in the curriculum arena to fulfill much of the role. Now that many subject areas are beginning to reach their staffing levels, it has proven difficult for other actors in the arena to "let go" of their curricular duties. The following are a few general recommendations for the unit.

Problems and Suggestions

- Suggestion 1. There is an immediate need to establish linkages and communication channels with schools, teachers, teacher training colleges, the DSE,

the DPE and the DTE, to assure rapid access to the schools and the use of the best minds in the country on curriculum issues.

- Suggestion 2. The CDU needs to continue adding staff, so that each curriculum area is fully staffed with at least three professionals.
- Suggestion 3. There needs to be a job reclassification and a promotion/incentive scheme to reward those curriculum developers who wish to "remain in place" and not seek a promotion out of their work.
- Suggestion 4. There should be a study of reorganization of the unit, as it is growing too large and complex for any one PCDO to supervise.
- Suggestion 5. We would agree with Nagel (1990) who states that the unit suffers from "a studied lack of clarity in the official policy of the MOE regarding the CDU's rights and duties in the writing, implementation and evaluation of curriculum."

Many other details on the curriculum are dealt with in our evaluation of the total curriculum effort in the next chapter.

- Suggestion 6. A thoroughgoing discussion of the "middle school" concept as it is developing throughout much of the rest of the world would appear to be in order. This debate involves the special nature of early adolescents (ages 11-15), the importance of an integrated curriculum, emphasis upon the individual child, and a range of other issues, not yet part of the curricular or organizational debate in Botswana.

Issue 6: Community Concerns and Communication

The twin themes of central responsibility combined with local rights to consultation and consent run through all the discussions.

Meyer, 1990

Meyer (1990) found a "consensual silence" in the major consultation conferences held in 1988 and 1989. It appeared to be taken for granted that Botswana must be seen as a modern national society, with no alternatives discussed. He explains this to mean:

...that society is organized around modern occupations; ...that the dominant aspects of the lives of youth will be managed by an educational system which will be standardized, universal, modern, extended in years covered and time pre-empted, and extensive coverage of the various aspects of life; ...that the individual life course should be integrated in a way that makes sense, and in particular that early socialization and education should flow smoothly into a later occupational career; and ...that this society is (and should be) integrated and controlled by a strong national state organization."

These four basic assumptions lead to problems of communication and coordination; communication from the MOE to its basic constituents, getting feedback from the public on educational policy and practice, and getting information and input relevant to the formulation of educational policy. These lead to the following recommendations from Meyer with which we concur, based on our discussions and observations.

Problems and Suggestions

- Suggestion 1. The MOE needs an improved information system to communicate the outlines of educational opportunities available for individuals, realistic prospects for such opportunities in the near future, and longer-run policy goals. Better information is needed by parents, students and the community about what is happening in the schools.
- Suggestion 2. In addition to information to the public, the MOE needs to inform the teachers and administrators within the schools about what is expected of them. This is particularly important in an era of educational reform, when new syllabi, educational materials, textbooks and examinations are being regularly produced.
- Suggestion 3. Through District Councils, the new Education Centres, and Kgotlas, more consultations should be held on at least an annual basis.
- Suggestion 4. The public relations and information function must be assigned to a specific unit within the MOE. This unit could be the EBU or some new unit, but at the present time, there appears to be a gap in filling this critical need.

Issue 7: Education for Employment

The schools should promote the concept of self-employment...market goods prepared by students....Every school should have a production unit...There are no jobs for school leavers (and dropouts).

National Consultations, 1988-89

One of the most critical issues facing the MOE and Botswana society in general is the problem of economic development and what role the schools can or should play in helping young people, particularly following Jr. Secondary to enter the job market. Proposals to deal with this issue generally deal with fixing education to produce employable graduates; linking education with the job market, to smooth out the transition; and using educational policy to reconstruct the job market.

Problems and Suggestions

- Suggestion 1. An information system could be developed by the G&C unit to be given to each Jr. Secondary school on job opportunities and skills required in various occupations.
- Suggestion 2. The RTC, along with the G&C units, could conduct an employability skills study, and begin to tie actual job skills to the curriculum through the CDU. (See appendix G for sample Index used in the US)
- Suggestion 3. The linking of each primary, jr. secondary and sr. secondary into community service, service learning programs can promote integration of the curriculum, in addition to providing a "real life" context for learning skills.
- Suggestion 4. Linking the Jr. Secondary schools more closely to the world of work through apprenticeships, cooperative education programs, on-the-job

observations and training, are all possible, but not likely, given the current curriculum framework.

- Suggestion 5. The expansion of the vocational education system, post jr. secondary, is the route taken by many developing nations. Without an expansion of available jobs, however, this is an expensive, and not always productive option.

Issue 8: The Structure of Schooling

Tradition calls for a 7-3-3. The MOE has recently moved to a 7-2-3. The Minister favors a 7-4-2. The National Plan calls for a 6-3-3 sometime after 1991.

JSEIP Evaluator

One of the crucial issues needing rapid settlement is the structure of schooling. A strong case can no doubt be made for any one of the above named structures, depending on what economic, educational, philosophical, or pedagogical paradigms one wishes to bring to the forefront. The issues involving the stress involved in taking the JC after only two years, the need for three years in a school to get to know the students, and the concepts involved in "middle level" education appear to have been inadequately addressed at this point. (See Appendix H for Educational Structure)

Problems and Suggestions

- Suggestion 1. Given the profound implications for curriculum development, criterion and norm referenced testing, textbooks, syllabi, and the organizational structure of the MOE, it is critical that this issue be decided very soon. The National Commission on Education could be reconvened to confront this issue at the earliest possible date.

Issue 9: Staffing in the CD&E

The DSE has three staff members in each curriculum area and we have only one or two...The Economists in the MOF are making the major educational decisions...The problem in Botswana is not a lack of funds but of qualified personnel.

CD&E Staff

The issues of staffing have come up throughout the evaluation process. These issues involve a wide range of issues, some of which have been touched on earlier. We believe that these are particularly important in the planning for the new BEC project.

Problems and Suggestions

- Suggestion 1. Counterparts need to be in place prior to any project involving international assistance comes on board. There have been several cases involving JSEIP in which no counterpart has ever been appointed, and others in which counterparts have left and not been replaced.

- Suggestion 2. Each curricular area in the CD&E needs to be staffed with a minimum of three qualified persons.
- Suggestion 3. Shadow positions appear to be an appropriate mechanism for staffing.
- Suggestion 4. Closer connections with the Ministry of Finance appear to be needed, whether through the Planning Office in the MOE or another mechanism.
- Suggestion 5. Whenever possible, locals/nationals who are qualified should fill positions. There appear to be cases throughout the MOE in which arbitrary rules and regulations prevent Botswana from filling particular positions.

Issue 10: Philosophy of Education

If only the expatriates would quit fighting over their particular viewpoints on education and do what is right for Botswana, we would all be better off.

Botswana Administrator

It is difficult to judge the depth of the particular problem over differing viewpoints on the future of Botswana education, but the evaluation team was confronted with many discussions of instances where there appeared to be minor or major differences between various expatriates, particularly the British and Americans. We make no recommendations on this, except to suggest that the GOB continue to make its decisions based on its understanding of its own culture and the directions it wishes to take.

III. CAPACITY BUILDING

Foreign advisors often help us "blunder" into success, as they don't know all the rules or customs, and thus can move rapidly to bring about needed change.

MOE Administrator

Our comments on capacity building must be seen in light of the history of Botswana; a nation which is only twenty-four years old, and is moving from a rural, agricultural nation to a modern, developing, technological society. That Botswana has moved from one of the poorest, least-developed nations in Africa and the World to having one of the world's highest economic growth rates in one generation is a staggering achievement. While cynics might suggest that this is due solely to mineral wealth and a small population, we would point to other nations around the world who have squandered their wealth and impoverished their own people. That Botswana has moved up to third place, out of 35 African nations, on an education performance matrix (USAID, 1988) is nothing less than extraordinary. That the nation does not yet have M.A.'s and Ph.D.'s to meet all of its educational needs is both understandable and not unexpected. Our comments, problems and suggestions then must be taken in light of the severe qualified manpower shortages faced by all sectors of this rapidly developing, modernizing society.

The choice of the word "blunder" in the above quotation was meant in a kindly manner, and was used deliberately to show how external advisors in a system can bring about changes, where a local Botswana might fail. We would hesitate to use such a negatively loaded word when describing the role of JSEIP in its capacity building function, as we believe that the project has had a profound and positive effect on the junior secondary schools of Botswana, and to a lesser extent on the total educational system. Some of that success has been due to "treading where angels fear to tread," and occasionally "blundering" into success. This chapter will attempt to outline ways in which JSEIP has been involved in capacity building in the crucial areas of personnel development, equipment acquisitions, facility construction, and organizational development.

Personnel Development

One of the major goals of JSEIP has been to "institutionalize the capacity to develop, manage, and support the junior secondary instructional component of the educational system." This goal includes developing the capacity of personnel in pre-service and in-service teacher education, administrator training, guidance and counseling, curriculum development, instructional design, system assessment, and evaluation. (See Appendix I for listing of Current CDU Staff).

A traditional mechanism for personnel development in assistance projects has been through the designation of counterparts. JSEIP is no exception to this form of on-the-job

training, and at one point or another, every long-term RTA had a counterpart appointed, but not all were placed. Due to a variety of reasons, however, this form of personnel development cannot be considered a major success.

1. Many of the counterparts were relatively inexperienced in the educational system, and were not accorded credibility within the bureaucracy.
2. Following the devaluation of salaries in mid-1988, it became increasingly difficult to attract and retain qualified counterparts in the MOE. Private industry and higher education "stole" several JSEIP counterparts.
3. Even though posts have been created for counterparts, some were given participant training opportunities overseas, some persons refused to move from their current posts, and in other cases no qualified applicants could be found.

Counterpart training in a regularized, formal sense has not been a major success of JSEIP. On an informal basis, however, the evaluation team has been impressed with the wide-ranging skill development which the JSEIP staff has been able to carry out in fulfilling their daily tasks. Numerous staff members at MCE, DSE, DTE and CD&E have benefitted from one-on-one training sessions, staff development workshops within the various departments and the MCE, and through participation in panels, writing workshops, and the many other activities that go on in busy MOE departments and at a teacher training college. It is impossible for us to quantify this impact, but it is significant and obvious to even the most casual observer.

Examinations are being prepared, syllabi written, trials conducted, classes taught, workshops designed and implemented, computers used, and textbooks written by Batswana. Not all of this can be credited to RTAs working with local staff, but it is obvious to us that JSEIP has had a profound and positive effect on countless SEOs, FEOs, headmasters, teachers, curriculum developers, examiners, researchers, typists, bursars, head teachers, and many others who make up the junior secondary system in Botswana. We have also been impressed with the positive "style" of most JSEIP RTAs, long-term consultants, and short-term consultants in working with local staff. Again, while we are unable to quantify this impression, our observations and interviews with numerous staff throughout the system indicate a high positive regard for the JSEIP staff and consultants.

- Suggestion 1. We would recommend that in any future projects, serious attempts be made to have counterparts in place/post, prior to the arrival of long-term RTAs.
- Suggestion 2. Once again, we would refer to the importance of creating a new job classification scheme, with improved salaries, housing, or other incentives to attract and retain critically needed curriculum developers, college staff, and others who are currently being "stolen" away.

The role of the short-term consultants has been another major way in which JSEIP has been able to develop personnel within the MOE. The vast majority of these short-term consultants have been extremely well received by the MOE and it appears to have been easier, in most cases to find "short-term counterparts" to work with these personnel. With

the exception of one MOE administrator, the staff of the Ministry appear to welcome further short-term consultants and they want to see more of them used in the future.

- Suggestion 3. One critique which has come to our attention is the need for more long-term RTAs with disciplinary expertise, rather than generalists. While a case can be made for both positions, we would tend to agree that at this critical time in the training of personnel, developing syllabi, writing textbooks and teaching materials, and conducting trialing and in-service, "expert" in a field are probably preferable.

The major strategy for developing professional-level personnel for staffing a variety of posts in Botswana's national education system was JSEIP's Participant Training Program. Under this program, master's degree candidates earned advance degrees at Universities in the United States with full financial support, including travel, with contributions from both USAID and GOB. The first group of masters students (N = 13) started their studies at the University of Botswana, and completed study at FSU from April 1987 through December 1987. The second group of masters students (N = 14) attended universities in the United States (10 to FSU, 3 to the University of Wisconsin, and one to Ohio University) from January 1988 mostly through December 1989 (2 remained in the U.S. as of early 1990).

In all, 25 masters students completed their studies and returned to Botswana by the end of 1989. A special study conducted under the auspices of JSEIP in February 1990 revealed that, of the 13 students in the first (1987) group, four were employed by the CD&E, five at MCE, and one at the DSE. The remaining two were employed in secondary schools. Comparable data for the second group of 12 returning students were not available. The employment results for the first group clearly indicate that the Program produced masters level personnel who found employment especially in MOE positions directly related to Junior Secondary Education in Botswana. Significant personnel capacity building was obviously accomplished through this means.

The 1990 Report cited above, and our inquiries, has revealed, however, that the participant training program was not without some growing pains. Though all returning participants were positive about their masters study in the U.S., felt it helped them in their work upon returning to Botswana, and improved their self-reliance, the first group in 1987 reported some lack of coordination among the participating universities on policies and expectations and the desire to have concentrated more on specialized professional courses of direct relevance to their work at home. These problems were worked out for the second group starting in 1988, and by all accounts this group of participants is quite satisfied and doing very well.

- Suggestion 4. Given MOE's great need for highly skilled and training professional personnel in curriculum and materials development, instructional improvement, curriculum and program evaluation, testing, guidance and counseling, preservice and inservice training of teachers, school management, and educational research, it is suggested that a steady long-range program for advanced training at the masters and doctoral levels be developed, funded, and pursued year-by-year. We understand that graduate programs in education specialities at the Univer-

sity of Botswana are well along in development and others are being planned. This is all to the good and should be pursued in specialties wherein local graduate training will be cost-effective by virtue of the demand (i.e., posts) for graduates in Botswana. This will not be the case in many specialties for the foreseeable future, however (e.g., only a few posts may exist in test construction and educational sociology), and a program supporting graduate study at foreign universities should be continued in specialties needed in Botswana, but for which local graduate degrees are unavailable.

Equipment Acquisitions

Another major part of capacity building is equipment acquisition. In Appendix J, is a report detailing equipment purchased between 1986 and 1990. The following general categories were purchased under JSEIP.

Photocopiers	Petrol Engine vehicles	Film projectors
Computers	Tables	Camcorders
Ribbons	Stools	Tools
Black Boxes	Chairs	Answer sheets
Disk drives	Furniture	Overhead projectors
Laser printers	Typewriters	Tape Decks
Dot Matrix printers	Trimmers	Micro-language lab.
Consumables	VHS Recorders	Microphones
Software	Video cameras	Bookcases
Monitors	Slide projectors	Bulletin Boards
4 WD vehicles	Colour monitors	

While there have been problems with maintenance, who should use vehicles, which offices should be supplied in what order, and a range of other issues, it appears to the evaluation team, that the CD&E offices are extremely well equipped, particularly when compared to similar facilities around the world. We were also impressed with the high quality of construction and equipment at MCE and the Education Centers. In addition to the quality of facilities and equipment, it appears to us that through formal workshops and day-to-day, on-the-job training, a large number of local staff are now capable of using the equipment. In almost all offices, we have observed local staff using computers, photocopiers, and other equipment bought with JSEIP funds. The equipment has been a major contribution to enhancing the capacity of the MOE staff to perform their tasks.

Facility Construction

Since the team was not auditing expenditures or formally evaluating either equipment or facilities, we have little to say on this topic, except to say that the CD&E facility is one of the best of its kind we have observed in the Third World. While there may be things that people would do differently the next time, it is an environment which is conducive to the curriculum development process.

The curriculum resource center at CD&E is excellent, once again in comparison to similar libraries around the world, and JSEIP is to be congratulated on its development. It should serve the Department well in the future, particularly if it can be kept current.

JSEIP has also made a major contribution of tools to the MCE D&T program. With over P200,000 expended, it has some of the best-equipped workshops and technical labs in the country, and is serving as an excellent model and training center for workshops in the schools. Once again, without JSEIP this capacity is unlikely to have been developed.

Organizational Development and Linkages

Chapter 2 has dealt in some detail with the organizational issues in the CD&E, so we will not repeat those here. In spite of our list of suggestions to improve the organizational structure of the department, we would start this section by saying that given the rapidity of expansion, particularly at the junior secondary level, and the incredibly complex curriculum task, the organization functions at a level considerably above that found in most developing nations around the world. This is due to many outstanding Batswana administrators, and to some degree to the participant training, counterpart training, and informal advice of JSEIP staff received over the five years of the project.

Suggestions

- Suggestion 1. Communications linkages are extremely important in the functioning of any complex organization. Several types have been experimented with at various times both within CD&E and the JSEIP staff, but we would recommend the following:
- Suggestion 2. Regular newsletters within the department-e.g. newsletter
- Suggestion 3. Staff meetings with required attendance by both local and expatriate staff
- Suggestion 4. Required attendance at in-service workshops by all appropriate staff
- Suggestion 5. A "walking around" administrative style to make sure needed communication is occurring
- Suggestion 6. The appointment of formal liaison persons, RTAs or local staff, whose job it is to link DTE, DSE, DPE, MCE, CD&E, and any other offices.

We would close this chapter by concluding that JSEIP has had a positive influence on the capacity of various parts of the MOE to perform their functions. It has not met a standard of perfection, but given the organizational and personnel constraints, it has still been productive.

IV. THE CURRICULUM DEVELOPMENT PROGRAM

Introduction

This chapter focuses on the process of developing curricular and instructional materials. It begins with a brief overview of the accomplishments of the Curriculum Development Unit and of JSEIP between 1985 and 1990 and then turns to a more micro-level analysis of specific aspects of the curriculum development process believed to influence the production of high-quality instructional materials. The topics selected for discussion and the recommendations offered are based on the assumption that it is more important to have high-quality materials in the hands of students and teachers than to have mediocre or low-quality materials produced "on schedule" — an assumption with which not everyone would agree. The major points made in this chapter are:

- 1 The field testing, or trialing, of curricular materials is the key to ensuring a high level of student learning. The process should not be short cut for any reason.
- 2 Those involved in the development of curriculum materials are often faced with competing responsibilities that interfere with producing the best products. Four steps could alleviate the problem: a) materials development writers should be released from other responsibilities; b) curriculum development officers (CDOs) should serve as managers of the multiple development tasks rather than doers of the tasks; c) royalties which accrue from the publication of curricular materials should go directly to the CD&F and should be used to contract for a range of curriculum-development tasks; and d) at least two full-time editors should be hired.
3. There is valuable and useful research on textbooks and student learning that can and should contribute to the curriculum-development process. While some of this research has been incorporated into the material being developed at the CDU, other, more recent findings, have yet to be incorporated. Summaries of this research should be made available to staff of the CDU.
- 4 Involving all primary and junior secondary teachers in a one-week inservice in the development of item specifications and test items for use in continuous assessment will contribute to the implementation, refinement, and integration of the new and revised primary and junior secondary curriculums and will facilitate the use of continuous assessment in the classroom.
- 5 The role of publishers in the development and production of curricular materials in Botswana does not always appear to be benefitting students and teachers. A study of their roles and influence should be conducted.

These recommendations are offered with at least partial knowledge of the constraints operating in the Botswanan context; e.g., shortage of staff, inadequate linkages, etc.. In some instances the recommendations attempt to address the constraints, but for the most part, it is assumed that the BEC project design team will consider the constraints more fully. For this reason, it is also recommended that both JSEIP and PEIP staff be represented on the BEC design team.

Background

Before turning to the evaluative analysis, a description of the background of curriculum development during the JSEIP tenure is provided.

When the first JSEIP technical advisor in curriculum arrived in November 1985, the Curriculum Development Unit consisted of six officers. Only two officers had formal training in curriculum development and two of the six had been in their posts for less than eight months. To compensate for the lack of staff, the CDU initiated a stop-gap measure by seconding two teachers in each core subject area and one optional subject area to the CDU to help develop teaching and learning syllabuses and materials for the Nine Year Basic Education Program. These personnel, along with Curriculum Development Officers and selected Secondary Senior Education Officers, became known as Material Development Teams (MDTs). The MDTs operated within the CDU from April 1987 through 1989 and primarily developed syllabuses, schemes of work, teacher's guides, and modules for their subject areas at the junior secondary level.

Currently, the Curriculum Development Unit has over twenty curriculum development officers, including four advisors provided through USAID/JSEIP funds. Whereas it had officers in only four subject areas in 1985, it now has officers representing ten areas: the core subjects of English, Mathematics, Setswana, Agriculture, Science, and Social Studies, as well as optional subjects of Art, Design and Technology, Religious Education, and Home Economics (to begin in 1990). Many of the more recently-appointed officers were formerly among the seconded teachers who were part of the Material Development Teams. Through the Kalahari Conservation Society, the CDU also has one full-time person working in the area of Environmental Education. The Unit has a Principal Curriculum Development Officer and three Senior CDOs. About half of the CDOs have Master's degrees and at least two more will have their Degrees by the end of the JSEIP project in December 1991. In addition, in early 1990, the CDU added a curriculum planner, a curriculum evaluator, and a production officer to its staff.

The CDU has evolved from a unit where many officers were unsure about how to write an instructional objective to a staff which is now concerned with ensuring that the instructional objectives are relevant and appropriate to the needs of the country and are validly and reliably tested and evaluated. It has moved from a time when individuals waited a week or so for a document to be produced by the secretarial pool to a professional staff who are using computers and laser printers to produce their own high-quality documents.

JSEIP has provided the CD&E with over 40 short-term consultants, extensive on-the-job training, overseas academic degree work, materials and equipment, and continuous long-term advisor assistance. The amount of assistance provided for each subject area has varied with the status of instructional materials and personnel. JSEIP has been primarily a catalytic development effort, rather than direct intervention, although in several instances, JSEIP advisors have been performing the actual curriculum development work. Chart 1 on the following page presents the current and predicted status of curriculum development for each

Progress Chart: Junior Secondary Curriculum Development **

Shaded Areas = Progress To Date	Syllabus Revision			Student Materials							Teachers Guides	Supplementary Material	Inservice Training	Planning for CRF Exams		
	Planning	Working Draft	Approval	Unit Object.	First Draft	Form. Evalua.	Revision Done	Final Draft	At Publish.	In Schools						
Core Subjects				Form 1												
				Form 2												
Agriculture (J.Chengeta)				Form 1								Interim 1990		As Needed		
English (R.Neshii, J.Scheffers, W.Lefebvre*)				Form 1							1990	1990		Ongoing		New Exams Set for 1991
				Form 2							1991	1991				
Setswana (N.Ratsoma, S.Mothei)				Form 1							1991	Interim 1989		As Needed		
				Form 2							1992					
Science (S.Makgothi)				Form 1							1992		Science Kits	As Needed		
				Form 2		1991					1993					
Social Studies (P. Richard)				Form 1		1991					1992	Interim 1988	Interim Modules Meth.Bk	As Needed		
				Form 2							1993					
Mathematics (V. Mogegeh)	No CDU	Involvement		Form 1												
				Form 2												
Optional Subjects																
Art (L. Ives*)				Form 1	Student Workbook	Teaching Syll. & Guides					Sept. 1992	Teaching Syllabus & Guides	Visual-Aid Packets	Ongoing		
				Form 2												
Design & Technology (T. Peleetswe, J. Robb*)				Form 1		1991					1992					
				Form 2							1993					
Home Economics (To be appointed)	CDO to Arrive in 1990			Form 1												
				Form 2												
Religious Education (K. Ramahobo)	CDO Returned from 2 yr. study leave, July 1990			Form 1												
				Form 2												
Non-Examined Subjects																
Music Education (No CDO)				Form 1												
				Form 2												
Physical Education (No CDO)				Form 1												
				Form 2												

Other CDU Officers:
 PCDO (P. Leburu)
 Ping Off. (P. Moankwena)
 Eval. Off. (N. Koolsee)
 Ping/Eval. Adv. (K. Noel)

* Long Term Advisors
 ** JSEIP Short-term Consultants:
 1. Agriculture - syllabus planning (1)
 2. English - student materials (1)

3. Science - syllabus, text design, formative evaluation (2)
 4. Social Studies - teacher guides, text/activity book teacher training, teaching methods book (4)

5. Art - syllabus development, materials development, teacher training (3)
 6. Design & Technology - content, design, student materials (2)

of the core and optional subject areas. In addition, Appendix E provides a more detailed description of development progress by subject area.

In our review of the curriculum development process, we found a wide variation in the approaches to curriculum development, the availability of counterparts, the role of RTAs, and the quality of the instructional materials. Many of the materials are of very high quality and incorporate a range of sophisticated strategies to ensure relevance and interest for Botswanan students.

Although it was enticing, a comprehensive review of these materials was impossible given the limited time constraints on the evaluation team. However, several issues in the curriculum development process were identified and are discussed in the following pages in the hope that the suggestions and recommendations offered will assist, rather than hinder, the commendable efforts of staff in the CD&E.

Field Testing of Curricular Materials

Conducting field tests of instructional materials prior to publication is essential to the promotion of high-quality teaching and learning. If students do not really understand the instruction provided through the materials, then all other activities in the curriculum development process are of little use.

Over the past several years, there has been an increasing array of evidence to indicate that students are not learning what we intend for them to learn. In fact, studies have shown that in many instances, students are able to pass tests in a subject area (particularly in mathematics and science), but when probed more deeply, exhibit little real understanding of the concepts they were taught.

Textbooks are a major culprit in this problem. Studies in the United States show that most teachers rely on textbooks for about 98% of instruction. Given the intense reliance on textbooks for conveying content, one would expect that extensive field testing of instructional materials would be the mainstay of textbook publishers. Dick (1987), however, reports that publishers collect relatively little data directly from learners. Typically, learners are observed during classes and teachers interpret their reactions to the instruction. Rarely are students tested on the objectives of the instruction or directly interviewed to get their reactions.

In the work of the CDU, field testing (also referred to as formative evaluation and/or trialing) of instructional materials has been inconsistent. Two workshops have been conducted on trialing of instructional materials. The first, in August 1988, was an eight-session series made available to the entire CDU staff and was designed and conducted by a JSEIP coordinator. It was attended by only some of the staff, and on an intermittent basis. Despite the fact that trialing of materials is a critical element of the curriculum development process, no directive was put forth to ensure that all staff attended these workshop sessions and incorporated the principles of trialing into their development efforts on a consistent basis.

- Suggestion 1. The CDU should establish a formal policy that all materials produced through the CDU and/or by publishers must go through the entire field test process as outlined in the paper prepared by Noel dated 1989. Materials that have been already produced but have not gone through all stages of this process should be required to complete it and should incorporate revisions based on these field-test results.

Guidelines on Trialing.

Two sets of written guidelines have been prepared on trialing: one set by one of the JSEIP coordinators, and another in June 1990 by a consultant. While both of these written materials are quite good, they came late in the project's activities and have minor inconsistencies that should be reconciled.

Inconsistencies and Problems.

For example, the consultant recommends that only one, above-average student participate in the one-on-one stage of trialing, whereas the JSEIP coordinator recommends that at least two, and perhaps three one-on-one trials be conducted:

- first with an above-average student who is more likely to be able to comment on the clarity of the text, directions, and instructions, etc. and will be more able to explain why he or she is having problems understanding parts of the text;
- second, interviews with a below-average student to provide evidence regarding readability of the material, complexity of concepts, need for additional practice and feedback, etc.
- Interviews with the average student may or may not be necessary depending on the information gathered from the other two types of students.

In addition, the consultant's report on trialing provides a partial, and quite useful, list of the reasons that students may not learn through the materials, e.g., there was too much technical vocabulary, not enough examples were given, the teachers did not know how to use the materials, etc.. What is not provided in either the consultant's report or the trialing workshop materials are strategies for determining why something didn't work.

- Suggestion 2. The sorts of issues highlighted above should be debated and decided by all members of the curriculum staff, and a consistent framework developed and used across subject areas. Deeper analyses, perhaps small-scale research studies, should be conducted to understand why materials are not functioning as intended. For example, in the areas of mathematics and science, researchers have found that many, if not most, students hold misconceptions of many scientific phenomena that run counter to accurate scientific explanations and that these misconceptions are quite resistant to change. There is a considerable amount of existing research articulating these misconceptions that could be useful in designing and refining the mathematics and science curricular materials.

One problem found in the trialing guidelines prepared by the consultant is the recommendation regarding the number of test items to use in determining whether students understood the material. The primary purpose of the field test process is to find out how well students actually learned the skills, knowledge, and concepts the materials were intended to teach. The consultant's report recommends that only one item per skill/objective be used during the field test. The problem with this is that that item may be flawed or simply too easy or too difficult, and thus, not provide valid information regarding student learning of that objective. Important decisions should not be made on the basis of only one test item.

The consultant also recommends an approach where not every student completes all test items, and this is fine. During the field test process, we are not interested in an individual student's performance (except at the one-on-one trialing stage), so it is not essential that all students complete all items.

- Suggestion 3. Each objective being assessed during the field test should be measured by four to five items. Item specifications should be prepared for each of the objectives and should guide the development of the field test items. These items can also be used for continuous assessment.

Writing Instructional Materials

Writers Should Write — Just Write

We have found several approaches to getting instructional materials written — each with its own threats to producing high-quality instructional materials.

Too Many Responsibilities.

In some instances, those writing curricular materials are doing so on top of existing professional responsibilities. For example, the teachers and SEOs on the science writing team were not relieved of any of their regular duties and performed the writing tasks in addition to their other responsibilities. Teachers were only relieved to attend team meetings or to monitor field-test classrooms.

Individuals who are attempting to perform two, presumably demanding, full-time professional roles, are likely to do neither as well as they would if they were performing in only one role. In one instance, the fact that writers were essentially holding down two jobs affected the quality of the revisions based on field test results.

For example, the members of one writing team participated in a field test of the early drafts of their modules with individual students. One of the JSEIP coordinators who worked with the group prepared the following summary of that experience.

“The writer participants appeared to be a bit skeptical about the benefit of a practical (one-on-one field test) exercise . . . (they) estimated that Module 2 should not pose much reading difficulty to the trial students. The writing was neat and straight-forward and the terminology being introduced in the materials was very basic and familiar to the students.

The writers knew what few, if any, problems there were with the passage, but to humour the leader of the session, cooperated fully in the 1-1 exercise.

"The writer's findings were somewhat different than what most of them had anticipated. Here is what they reported . . .

- "My student pronounced "role" as "rule," "precaution" as "pree-caw-tee-on." Also the student couldn't pronounce or didn't recognize: laboratory, portions, experimenting, investigating, processes, physical, observe, record, accurately, conclusion, environment, footsteps, rely (pronounced "relay"), and blindfold.
- "My student couldn't concentrate. She had a big problem with vocabulary and especially problems with understanding the instructions.
- "This was an eye opener on words that students do not understand, but which we take for granted.
- "This was a very useful exercise. I just assumed that students would know these things." (Noel, Notes from Debriefing Session of Writers, February 1989).

After reading this debriefing report, this evaluator commented to the JSEIP coordinator who had written the report how useful the one-on-one process seemed to be and that I was pleased to see that the writers were taking the field-test process seriously. To my surprise, he told me that, despite the fact that the writers were impressed with the information gleaned from the one-on-one field tests, it was unlikely that they all continued to use the processes in the review of later materials — primarily because they had so little time to devote to the writing-revising process given the demands of their teaching responsibilities.

The vignette provided above illustrates three points: first is the problem with expecting writers to perform two jobs at the same time; second is to convey the value of the one-on-one field test process; and third is to highlight the discrepancy regarding what we think students know and will understand and what they actually know and understand. This is precisely why such emphasis has been placed in this chapter on the importance of the field-test process.

Unrealistic Timelines.

In another subject area, an extremely tight deadline had been set for producing the Form 1 and 2 materials that was doable, but led to shortcuts in the revision process as well as to stress and exhaustion on the part of the curriculum officers who also served as writers. What follows is a detailed description of an incredibly intense schedule for two curriculum writers (one a CDO and the other a JSEIP RTA).

On a daily basis, these two staff developed a complete lesson. Each lesson included material for the student's textbook, the student's workbook, and the teacher's guide. On the following day, they would travel to a field test school, teach the lesson developed the previous day, get feedback from the students, and return to the CDU to revise the materials and develop the lesson for the next day. Because of this intense schedule, there was little time for the kind of reflection that would lead to more thoughtful revisions. This procedure was repeated five days a week for two years.

On top of these tasks, they also developed three end-of-term tests and six weekly tests for each of the yearly curricula. They administered and analyzed the test results and used them in the revision of the curricular materials as well as in revisions of the tests.

In the second year of development, the year-one materials were being field tested in 12 schools, so the task of monitoring the implementation in these 12 schools was added to their responsibilities. At the same time, they were developing year-two materials and teaching each day at the first-level field test school on the same schedule described earlier.

In addition, they were responsible for developing and conducting the inservice sessions for the teachers at the 12 field-test schools. These inservice sessions were conducted around the country for a total of 12 days distributed over one year. In addition, each of the teachers at the 12 field-test sites were given forms to use to evaluate the curricular materials, and the responsibility for analyzing these evaluative comments and using them for revising the materials fell on these same two staff.

In January 1990, when the materials were distributed nationally, these two staff were responsible for developing and conducting inservice training on a national level; that is, 15 days of workshops for approximately 60 teachers per session throughout the country.

While it is amazing and commendable that they have accomplished so much, there is considerable amount of distress, and the trialing process was incomplete and not as fully used as it might have been given a more realistic schedule.

Clearly some of these problems are the result of insufficient staff to complete the tasks, but others are the result of unflagging allegiance to production deadlines. We recognize that it is important to get curricular materials into the schools, and that even mediocre materials may, in some cases, be better than what are currently in place. But we would argue for more reasonable production schedules that take into account the realities of a limited number of qualified staff and the fact that instructional materials may actually do more harm than good if they lead students to feel that their lack of understanding is their own fault rather than the fault of the textbook.

Royalties and Honoraria.

Production problems are also exacerbated by the issue of royalties and honoraria. We have learned that some royalties from the development of the instructional materials go to the MOE. In some instances, members of writing teams have received honoraria or royalties for their work, and apparently different individuals receive different amounts.

Suggestion 4. Several integrated suggestions are implied here. First, there are too few CDOs to perform adequately all of the tasks involved in the curriculum development process without taking short cuts that may compromise the quality of the materials. Instead of trying to perform all of the tasks themselves, CDOs should serve as managers of others who complete the tasks. They should oversee the writing, trialing, review, and production of materials, and should work with the range of pre- and inservice trainers in the dissemination and diffusion of

materials. They can also help shape and participate in small-scale research studies regarding curriculum development. Teams of writers should be hired to devote full time to producing the instructional materials and royalties should be used to relieve the writers from their other professional responsibilities. CDOs should receive training in the contracting and managing of the curriculum development process.

Royalties which accrue to the MOE through curriculum products should be under the control of the CD&E rather than go into general MOE funds. These funds could be used to support writers and to provide them with training as required. This approach has the benefit of speeding up the process of developing instructional materials without compromising the quality of the materials, and recognizes the difficulties in acquiring a sufficient number of posts in the CDU. Royalties could also be used to hire and train individuals, such as college and university students, to conduct formative evaluations of materials.

In addition, the project should have at least one, and preferably two, full-time editors on staff — who not only know the technical aspects of editing, but also are familiar with how students learn and how teachers teach.

Using New and Existing Research in Textbook Development and Student Learning

Over the past several years, a substantial amount of research has been conducted on two topics: one is the study of how students think, learn, and solve problems and the other is on textbooks. The student-learning research is usually referred to as cognitive science and has begun to have an impact on a variety of areas of education including teacher training, curriculum and textbook development, and classroom instruction. There is evidence that this body of research has also influenced curriculum development and teacher training efforts in Botswana.

The research on textbooks is primarily aimed at identifying ways to increase students' meaningful comprehension of and interest in the material contained in a text. This disparate body of research is more recent and has not been gathered together into one place. Little of it has made its way into the practice of curriculum and instructional materials development.

It is proposed that the more familiar research on student learning be used as a guide for reviewing the current curriculum-development efforts in Botswana, including a review of the 1-9 curriculum, and that a synthesis of the newer textbook research be prepared and made available to the staff of the CD&E.

What follows is a brief review of some of this research that has relevance to the production of high-quality instructional materials and teacher training.

Research on Student Learning

Probably the most potent and generalizable finding from cognitive research is that students come to school with an existing base of knowledge, ideas, and conceptions, and that

this prior knowledge has a substantial influence on what a student is able to learn. Learning theorists now know that new knowledge must be connected to existing knowledge in order for it to be meaningful to students. Simply telling students what the correct fact or concept is does little to help them make sense of new knowledge. Both children and adults appear to be quite adept at housing both their own knowledge and the book's knowledge side by side in a morass of inaccurate and incoherent understandings about the world. Unless students' existing knowledge and conceptions are articulated, confronted, and respected, instruction has little impact on student learning. Although this notion of students' existing knowledge has been incorporated into some of the curricular materials and teacher training, its influence could, and probably should be far more extensive.

The theoretical underpinnings for the importance of existing knowledge rest on the notion of schema. Schema refers to the way individuals organize their knowledge and experience. We all have somewhat different schema about different topics. The more developed our existing schema, the quicker we are able to assimilate new knowledge. The less developed our schema about a topic, the more assistance and time we need to incorporate new knowledge.

Organization has long been considered a key aspect of knowledge acquisition and use, and in fact, Polya (1973) considered good organization as being even more important than the extent of one's knowledge. Organization is equivalent to connectedness. It is believed that individuals organize their knowledge by making connections, or links, between and among related concepts. Being able to access and use knowledge is believed to be a function of the strength of these associative links or relations. In fact, seeing the relationships between units of knowledge is really the sine qua non of conceptual understanding. While it may require more time and effort to acquire deeper levels of relational understanding, the concepts and their relationships are far easier to remember and thus use in the future — to solve problems, to make decisions, or to learn new material. It is the coherence of the knowledge that makes it more accessible.

Students can be assisted in learning by having instruction that is explicit about how knowledge fits together — that is, that shows the connectedness and coherence of topics within and across units in a book, topics across subject areas, topics across years of a curriculum, topics across school and home, etc..

In fact, a recent study comparing mathematics classrooms in the U.S. and Japan identified coherence as a major difference (Stigler and Perry, 1987). In Japanese classrooms, teachers explicitly assisted students in making inferences and seeing how the differing segments of a lesson were related. Transitions between segments were often marked by verbal discussions of the relationships between the two segments and teachers often started the lesson by explaining the goal of the day's class and how the activities related to the goal. Japanese teachers often attempted to relate different activities to each other as a way of discussing the principles that underlie different mathematical procedures.

The notion of coherence centers around the need for key ideas, or themes, which serve as the anchors for a cognitive structure and allows a richer set of connections than would less

central ideas. The importance of central ideas or concepts in accessing and using knowledge suggests that instruction be designed in a way that the central ideas are made explicit, and that the number of ideas or concepts presented to students be limited in order to promote deeper understanding and a rich connectedness of relationships.

Suggestion 5. One implication of these findings is the need to reduce the number of topics covered in a curriculum. Most curricula address far too many topics, so that there is superficial coverage of many topics with little true understanding of any of them. When confronted with a choice of depth versus breadth, meaningful learning will more likely occur if students are provided with opportunities to study a topic in depth.

Representation.

Representations of concepts and the relationships among concepts is a means of fostering coherence, or connectedness. Representation can take several forms, including the use of concrete materials, analogies, metaphors or physical models. Although some important and relevant research has been conducted on representation, little of it has been implicated in textbook production.

For example, Mayer's conceptual models are words and/or diagrams that are intended to help learners build mental models of systems (e.g., Ohm's law, density, photosynthesis, etc.). A conceptual model highlights the major objects and actions in a system as well as the causal relations among them (Appendix L). Mayer's hypothesis was that students who are provided with a model of a system are more likely to build their own mental models to use to generate creative solutions to transfer problems.

In a recent article, Mayer (1989) summarized the results of 20 studies involving 31 tests over a 15-year period to assess the impact of conceptual models on students' performance. In all studies where conceptual recall was measured, the treatment students outperformed the control students by a median of 57%, and for tests involving problem solving transfer (a particularly thorny issue in education), the treatment students' scores were a median of 64% higher. These are dramatic results that have clear and immediate implications for textbook development, especially since Mayer has articulated the characteristics of good models, as well as when and where they should be used.

Graphic representations are another strategy that could easily be integrated into students' textbooks and workbooks and have been found to increase students' understanding of which ideas in a text are important, how the ideas relate to one another, and can help them to see which points are unclear. Graphic representations are visual illustrations of verbal statements, such as flow charts, spider maps, network trees, or compare/contrast matrices. When associated with sets of questions or categorization schemes, they are referred to as graphic frames. A good graphic representation can show at a glance the key parts of a whole and their relations, thereby allowing a holistic understanding that words alone cannot convey. Research on graphic organizers found no effects when they were used before reading, but strong effects when students constructed them after reading (Jones, Amiran & Katims, 1985).

Suggestion 6. Conceptual models and graphic frames should be tried out in several of the curricular modules being developed. Small-scale studies should be conducted to determine if they are helpful to student learning in Botswana, and when, where, and how they are best used in materials and in teaching.

In addition to the organization of knowledge, researchers have found that learning is also fostered when learners are made more aware of what they know and don't know about a subject. The acts of verbalizing or writing about content help to bring one's thoughts to a conscious level, allowing the thoughts to become an object for reflection. Understanding is more likely to occur when a student is required to explain, elaborate or defend his or her position to others; the burden of explaining is often the push needed to make the student evaluate, integrate, and elaborate knowledge in new ways. Writing and verbalizing help students to consolidate and to see the inconsistencies in their thinking, thus serving as an impetus for resolving the inconsistencies.

Another strategy to promote knowledge awareness is to conditionalize knowledge, that is, to provide information about the contexts in which the knowledge might be used. This involves articulating the features of a problem situation that, if present in future situations, would suggest that the same information be utilized. Some researchers have found that students are more likely to use what they learn in new and relevant situations if they are asked to produce written comparisons or visual representations that highlight common and important features across similar situations.

In summary, the research described above suggests that textbooks aimed at improving students' abilities to access and apply knowledge in potentially relevant situations is more likely to be successful if it: 1) provides learners with opportunities that help them to establish meaningful relationships between new and prior knowledge; 2) induces them to apply strategies for organizing and processing information; and 3) assists them in discovering concepts and relationships. In addition, the use of central ideas or themes facilitates coherence in knowledge acquisition and use, as do representations of the knowledge base.

Awareness is promoted by contextualizing knowledge and by providing learners opportunities to verbalize and write about content. These strategies help learners to bring their thoughts to a conscious level and to consolidate and see the inconsistencies in their thinking. Focusing more instructional time on employing knowledge will increase the likelihood that knowledge will be accessed and used in potentially relevant situations.

While we noted many instances in which the new and/or revised curricular materials have incorporated the use of student group work to encourage opportunities for students to enhance their understanding of the material through verbalization, the curricular materials produced by the CDU could benefit by a greater effort to contextualize knowledge and to show connectedness.

Curriculum developers have worked hard to ensure that instructional materials are student-centered, that they promote students' thinking and problem solving abilities, that they integrate topics across the curriculum, and are more practical in nature. However, it is time

to step back and to determine how thoroughly these intentions have been met and how future development materials can be improved.

Suggestion 7. BEC will require a complete review of the 1-9 curriculum. The next 15 months of JSEIP could facilitate that process by hiring a team of consultants to develop guidelines for this review based on recent research in teaching and learning, e.g., the need for coherence, context, and themes, etc.. The following specializations might be represented on the team: content specialists, someone familiar with cognitive learning theory, subject integration specialists, instructional design specialists, and individuals who are experienced in writing test item specifications. The curricular reviews might then be conducted by similarly comprised teams with separate teams for each subject area (or maybe for two related subjects, such as science and mathematics, social studies and Setswana, etc.) The teams would work with CDOs, SEOs and classroom teachers across grade levels to review the complete 1-9 (preferably 1-12) curriculum in each subject area.

New Research in Textbooks

A considerable amount of research has been conducted over the past 8-10 years on textbooks. As mentioned earlier, little of this research has made its way into practice, and has not been integrated into a coherent piece of work. It is based, however, on much of the cognitive research described briefly above.

For example, in teaching vocabulary, the typical instructional strategies of checking the dictionary, using the words in isolation, and writing them in sentences, have been found to be of little value. Instead, another approach called semantic mapping, emphasizes showing students where a new word fits into their existing repertoire of words. According to Pearson (1982), "We learn new concepts only in relationship to concepts we already know. The key to teaching vocabulary is not defining words, but seeing how they fit in." Semantic mapping has students use the word in context, classify words, and associate unknown words with known words — all strategies that have been found to enhance the learning of new vocabulary and all that can easily be built into textbooks and teacher's guides.

In reading, several strategies have been found to influence comprehension. For example, the instructions students are given before reading may lead them to look only for precise answers to specific questions, or, may instead, guide them to look for a more coherent understanding of the material. Comprehension is affected even more by the pattern of questions the students learn to anticipate. Students learn to read with only those types of thinking that the teacher's or textbook's questions ask of them. If the questions are primarily for factual recall, students will memorize facts; if the questions ask them to analyze intent or interpret meaning, they will engage their reasoning abilities; if the questions ask them to think of as many ways as possible to solve a problem and to critique the solutions provided for feasibility given existing constraints, then students will become able problem solvers.

Beck (1988) argues that to lead students to better understanding of the content, questions within a text should be coherent and integrated. A systematic line of questioning seems superior to the random barrages of unrelated questions typically found in many popular texts.

One strategy that has had particularly profound results in improving student comprehension is reciprocal teaching (Palincsar and Brown, 1984). Reciprocal teaching is intended to enhance students' comprehension of written material and involves students in summarizing, question generating, clarifying, and predicting. Studies of reciprocal teaching have shown increases in students' comprehension accuracy from 15% to 85% in just 20 days. Although reciprocal teaching was designed for use by teachers with small groups of students, each of the four components (i.e., summarizing, question generating, etc.) could be incorporated into textbooks and teachers' guides.

Readability formulas were designed as a quick, numerical tool to identify complexity in written text. Instead, their use has resulted in books that have short, choppy sentences, are void of connective relationships (e.g., because, therefore, however), and use nebulous monosyllabic words instead of precise words (See later discussion on publishers for an example of such writing). According to Meuthner (1989) training textbook evaluators how to use these formulas today is a waste of time. Instead, training should be provided in how to identify high-quality, clearly written texts — books that are easier for students to read, understand and remember.

The issue of good writing is probably the most critical, yet elusive one to tackle. Several researchers are studying the quality of writing in textbooks and have begun to articulate the elements of good and bad writing. Britton (1986) has even rewritten several units of secondary-level biology texts and is field testing the "good and bad" versions with students. Although it is obvious to the reader which is the better version, Britton is just beginning to articulate these distinctions. This is important to do if one is concerned with improving textbook quality.

These and many other topics are being studied and have potentially powerful implications for the development of instructional materials and teachers' guides in Botswana.

In addition, there are bound to be other issues and questions that arise in the process of developing materials. For example, the science writing team (and probably other teams) struggled with the issue of how prescriptive the Teacher's Guides should be in guiding teachers to use individualization and small groups. Some believe that the guidance should be minimal so as to not inhibit teachers' creativity. Others have observed that "teachers are slavishly attached to the materials ... and are neither dramatically creative in their teaching ... nor able to implement individualization or small groups because they are not provided with adequate guidance."

Most of the issues and questions that are encountered in curriculum development in Botswana have been confronted repeatedly in similar projects around the world. For many of these issues, research or evaluation studies have been conducted and could provide guidance to the CDU staff.

Suggestion 8. CDU/JSEIP staff should take advantage of existing research results. USAID Washington, USIS, and British Council may be able to provide research reviews. If not, JSEIP funds should be used to contract for such services — perhaps on a retainer basis. One overall review of the latest textbook and learning research should be conducted within the time remaining on the JSEIP project, and additional issues or questions could be searched as they arise, both in JSEIP and in the upcoming BEC project.

These reviews should be easily readable and should be prepared for CDU staff and all curriculum consultants. They should not be prepared as though for academic publication, but rather as useful and accessible resources to guide future revision and development efforts. Short- and long-term consultants should be provided with copies of the reviews prior to arrival in Botswana so that they will be familiar the conceptual framework within which curricular materials are being developed.

In addition, such issues should be the topics for regular meetings with the CDU and inservice staff. In fact, a seminar series could be started to discuss key issues and to share the results of research studies and/or research reviews. These seminars would be an ideal time to promote linkages among the various groups involved in improving schooling, e.g., all CD & E staff; teacher education faculty; SEOs; FEOs; community/parent representatives (such as PTA presidents and school board members); and, in some cases, policymakers. The early stages of BEC would be an ideal time for reflection and planning

Suggestion 9. It would also be useful to invite policymakers to submit questions for research or research reviews on questions and issues of import to them. Separate seminars could be held for policymakers.

Inservice in Continuous Assessment

Operations are underway at the CD&E Department to introduce criterion-referenced testing and reporting methods for certification testing and continuous assessment. Staff have begun to construct test blueprints and test plans that clearly represent each subject's curriculum objectives from which detailed test question specifications can be developed. Refined test and item specifications in each subject will reflect important curriculum objectives to be tested by the PSLE and the JCE, and will also provide a basis for continuous assessment in the classroom. Testing will then become aligned with the curriculum and can facilitate curriculum implementation and student learning of important curriculum objectives. Teachers will no longer be faced with disparate goals of teaching so that students will pass the PSLE or JCE, and teaching the curriculum.

Suggestion 11. As an approach to helping teachers understand both the new curriculum and continuous assessment, we recommend that all teachers be involved in the development of item specifications and test items to be used for continuous assessment at the classroom level. Although this is a time-consuming and costly approach to test development, there are several important benefits to be derived from teacher involvement.

The process of writing item specifications (that is, determining what should be tested and how it is best tested) is a rigorous intellectual exercise that requires writers to engage in a fine-grained and detailed analysis of the skills, knowledge and concepts to be taught. Few teachers ever have the opportunity to engage in discussions about subject-matter content with their colleagues, particularly at such an analytical level.

- Teachers who participate in such an activity will certainly develop a deeper understanding of the subjects they are teaching, and are likely to become better teachers as a result.
- Because the process requires that teachers consider common student errors or misconceptions, teachers are more likely to understand their students' understandings and to better accommodate their teaching to students' needs. Research in student learning has found that much instruction fails because some of the more subtle, but important details of a topic or concept remain tacit. The process of writing specifications and test items often makes these tacit details explicit, which in turn will increase the likelihood that teachers will make the tacit explicit when conveying the information to their students.
- The process will vastly increase the likelihood that teachers will better understand the new curriculum and continuous assessment, and will clearly see the links between curriculum, instruction and assessment.
- In addition, teachers will have opportunities to share with each other ideas and practices about their subjects, their students, and their teaching.
- This process can contribute to curricular refinement since it is likely to highlight deficiencies or gaps in the curriculum. It can also be used as a forum to identify where topics can be integrated across subjects.

A schedule can be developed whereby every primary and junior secondary teacher spends one-week during one of the three-week breaks, working in small groups with his or her colleagues to develop item specifications and items for selected subject areas at their grade level.

The products of their work can be collected by the RTC and revised and distributed to all other teachers in the system (by grade level). At the end of the process item specifications and test items will be available to assess every objective within the 1-9 curriculum. Teachers can also learn to use the results of continuous assessment to provide remediation to students who have not mastered the skills and to adjust their instruction based on class test results.

Suggestion 12. Since this approach to inservice training is quite costly, it should be tried out on a limited basis and evaluated to determine if the anticipated benefits listed above actually accrue. The evaluation should also consider the costs of this approach and should compare them with other inservice alternatives. However, it is recognized that various inservice strategies are not mutually exclusive, and in fact, are probably mutually supportive.

In addition, to implement this on a large-scale basis will require at least one full-time staff person housed in the curriculum development unit whose time is devoted solely to

teacher-training of continuous assessment. It is also important that teacher educators, FEOs, and SEOs be invited to participate in the training efforts and should be the targets of the first level of training.

Publisher Accountability

We have learned that an agreement was made to provide Macmillan Publishers with exclusive rights to publish all new curricular materials. There are potentially serious risks in such an agreement, one of which is a lack of incentives to provide high-quality services and products on an ongoing basis. In essence, such an agreement gives the publisher all the leverage with little or no accountability.

A case in point: The junior secondary science materials are being prepared by a team of writers consisting of and under the supervision of the science CDO. The materials being produced are generally of high quality and there is extensive trialing and revising.

However, the primary materials, while under the general supervision of the science CDO, are being written by two publishers different than the one publishing the junior secondary materials: Longman and Macmillan. The Standard 1-4 materials are being written by a Batswanan author hired by Longman and the Standard 5-7 materials are being prepared by an author designated by Macmillan and located in Great Britain. This distance has made ongoing communication difficult.

Both sets of primary materials are being critiqued by the science CDO and the Standard 1-4 materials are being translated by primary science panel into Setswana. According to the science CDO, the Standard 5-7 materials being prepared by Macmillan do not conform to the Botswana science syllabus. In addition, a review of the Standard 5 Pupil's Book by a member of our evaluation team reveals substantial problems with the text.

For example, there is little attempt to provide coherence throughout the book. Unit 1 on Animals begins by showing pictures of animals and asks which are covered in feathers, hair, or scales, then has the students complete a matrix to fit the animals in each of the three categories and draw pictures of each. It does not say, "In this unit we are going to learn about animals. Scientists learn about things by observing them. You will observe animals and learn to classify them. Classifying things means putting them into categories — or groupings. For example, . . . — and then the teacher can have the students classify something simple like buttons, or leaves. She should then tell why classifying is useful, explain how it is the first step in the scientific process, and then lead into ways of classifying animals.

When the Macmillan text does mention that they have put the animals into three classes (the word "classes" is bolded to indicate that it is a new and important word, yet does not explain what it is or how it is important and useful in science — or in life).

The text then gives several short, choppy and rather incoherent paragraphs about hairy animals, scaly animals, and feathered animals. For example, "Animals with feathers are called birds. They have two legs and two wings. Most of them can fly. This ostrich cannot

fly. Why can't it fly? How can it get away from its enemies? All birds lay eggs. The eggs have hard shells. Hens' eggs are good to eat. They help young children to grow strong." Not only does this passage lack coherence, it is modeling poor writing, and is patently uninteresting and gratuitous.

The text then tells the students to learn about animals by watching them, to ask questions, and to write them down. Along the side of this page are the questions "how, why, when, where and what" in large letters and in circles. Next to these words are questions and comments, but the questions and comments do not relate to the type of question they are located next to — e.g., next to the WHY? is "What do you eat Mr. Lizard?" Next to the WHERE? is the question "How can you give it water?" And next to this sentence is the letter "T" within a diamond shape. The text does not tell the student what this "T" means.

It then has a chart showing all the things that come from cows. First, it is unclear how this relates to the presumed, unstated, objective of classifying animals. Second, it indicates that one of the things that comes from cows is meat and has an arrow that points to a box of Ecco Corned Beef — not a picture of a steak or roast. While this chart appears to be fairly comprehensive in that it shows that the bones are used for bone meal, the blood for fertilizer, the horns and hoofs for glue, it neglects to show that milk, butter and cheese come from cows — until the last page of the unit where it presumes to summarize the material.

What is the objective listed in the Botswana Science Syllabus for Standard 5? "Students should be able to identify characteristics of reptiles, mammals, and birds, fish, amphibians." The assessment objective for the unit has students classify six vertebrate groups according to their characteristics and identify similarities and differences between two or more groups of vertebrates. The Macmillan text deals with only three groups, does not give them opportunities to identify similarities and differences between groups, and only asks them to classify the vertebrates in terms of whether they have feathers, hair (or fur), or scales, and again at the end, whether they are reptiles, mammals or birds.

In this quiz that asks, "Which of these animals are reptiles mammals or birds. It then shows several pictures of animals, several of which would be impossible for the students to categorize based on the information contained in the unit. For example, there is a picture of a tortoise, and another picture that is not distinguishable.

The students were given virtually no opportunity to classify animals, no framework for organizing the classes of animals based on criteria, and no indication about what they were supposed to learn in the first place. The final exercise has the students copy a list of words (presumably the parts and products of a cow (including Ecco Corned Beef), although the lists of parts and products are not labeled) and draw lines between the parts and products of a cow. It is not at all clear how this exercise relates to the objective of the lesson and there is not another exercise or set of questions that do relate to the objective.

The criticisms articulated above were identified within just nine pages of one student text, with most of each page containing pictures of animals (seven of cows), and half of these pictures not labeled. Imagine what kind of critique could be done with the entire book.

Suggestion 13. The United States has recently gone through a rather thorough examination of the entire process of textbook development and adoption (Tyson, 1989). This major study has revealed that there are many institutions, practices, and policies that work together to unintentionally undermine getting high-quality learning materials into the hands of students. Clearly, the process of textbook development and dissemination is different in Botswana, but we have learned that, here too, there are problems, and that publishers are playing a very influential role. While their role is often constructive, publishers have aims and goals which may sometimes conflict with the aim and goals of educators. We recommend that two types of studies of the textbook development and dissemination process be conducted, perhaps under the auspices of IEES.

One study would be a review by an expert in textbook projects in developing countries, focusing on issues such as warehousing, printing, scheduling, production, layout and design, etc. There is an individual, Peter Newman, who has conducted similar reviews in many countries for the World Bank and USAID and has published extensively on the topic.

The other study would focus on the ways that publishers, advisory panels, and other groups may inadvertently undermine getting high-quality materials into schools. Harriett Tyson conducted the review in the U.S. and her study has substantially altered textbook practice for the better.

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V. PRESERVICE AND INSERVICE EDUCATION

Teacher Education

Perhaps the major problem of Teacher Education in Botswana is that we have no underlying philosophy or approach.

MCE Faculty Member and MCE Administrator

Teacher education and even schooling can be seen in four basic philosophical approaches as to their design and functioning. These paradigms are found throughout the world and at least three of them can be found at the MCE and the University of Botswana. From the JSEIP evaluators interviews, it would appear that there is, as yet, no firm commitment to any particular approach.

1. The "Teaching Craft-Apprenticeship" approach involves taking a series of theoretical courses, generally at a teacher training college or university, and learning the practice of teaching out in the schools as a student teacher. It is a pragmatic approach, which may involve bits and pieces of each of the other models. Its purpose is to prepare a teacher for the schools as they are, not as we might wish them to be. That which already exists will best be replicated by students spending time in the schools and learning what "master" teachers do best.
2. The "Humanistic" approach is one in which the needs of the individual teacher are foremost. The emphasis of the program is on the affective domain for both the teacher and in their teaching methodology, with the teacher becoming more of a counselor and facilitator of learning than a dispenser of knowledge or instructional designer. Its purpose is to change the schools from being cold and impersonal, into a warm, caring environment, which the young wish to attend.
3. The "Behavioristic" approach seeks to ensure that performance objectives, criterion and norm referenced testing, formative and summative evaluation and carefully designed competencies characterize both the training and eventual practice of the teachers. What knowledge young people need is known, and it is the schools which must be designed to impart that knowledge. Its purpose is to improve the achievement of students through a carefully designed and monitored instructional system.
4. The "Inquiry" approach is characterized by its open-ended search for truth. It takes the scientific method as its basic model, and seeks to have students find answers for themselves with as little external coercion and planning as possible. The curriculum in both teacher training and in the schools is based on real-life problems, and the curriculum is generally integrated, so as to bring knowledge from several disciplines to bear on the problem. Its purpose is to change the schools and society through creating not just inquirers, but problem-solvers and creative analysts.

The vast majority of teacher training programs throughout the world are of the first type; a traditional-craft-apprenticeship model. Botswana, as seen through the Molepolole College of Education is no exception. The curriculum reflects most of what goes on in teacher train-

ing institutions around the world, with similar courses and similar school-based experiences. Whether the model has or will continue to serve Botswana well is frankly based on one's philosophical perspective. (See Appendix M for Curriculum of the Education Department)

If one believes that the Instructional Systems Design Approach which underlies some of the curricular materials being developed in the CDU is best for Botswana, then much more needs to be done to bring the teacher training curriculum into line. A start in this direction has already occurred with modules/units having been developed for several courses in the college by one of the JSEIP RTAs, but this only involves the Department of Education, not the subject matter disciplines. If the "humanistic" model were to be developed, MCE would have to start almost from scratch, as only a rudimentary counselling emphasis exists anywhere in the college. The "inquiry" approach can be found in occasional classes at the college, but permeates little of the overall curriculum or approach to teacher training.

Problems and Suggestions

- Suggestion 1. It appears that MCE is ready to revisit its philosophy. As an alternative to the whole college having one basic philosophy, it might be possible to experiment with two different approaches, and test which approach appears to best meet the needs of teachers and students in Botswana. The current mixture of philosophies and resultant pedagogies leads to students being unsure of what to do when they get out into the schools. It is particularly important for MCE to work closely with the new Tonota College of Education in conceptualizing its philosophy and curriculum.
- Suggestion 2. Given the deep and lasting importance of the Education for Kagisano (1977), it would appear that the National Commission might be reconvened to discuss not only the structure of schooling as recommended elsewhere, but also to help decide what Kagisano, with its commitments to Democracy, Development, Self-Reliance, and Unity, says about the best approach to teacher education and the curriculum to best meet the needs of Botswana.
- Suggestion 3. The MOE might consider contracting for an analysis of the implications of recent research on student learning. This might lead to a new model of teacher training based upon recent developments in the study of cognition.

The Battle to Come

Teacher education is both complex and controversial in the final decade of the twentieth century. It has become a battleground between theory and practice, process and product, subject matter and pedagogy, and action and reflection, to name but a few of the many tensions. With the tremendous press to produce large numbers of teachers to work in the rapidly expanding Primary and Jr. Secondary schools, the philosophical battle has yet to be joined in Botswana. The policy decision, however, to make Jr. Secondary universal and part of a 1-9 Basic Education program would seem to make a philosophical discussion, if not a

battle, over the philosophy of not just teacher education, but the curriculum, purposes of schooling, and a range of other issues almost inevitable.

If a universal, unified Basic Education is to come to pass in the next few years, Botswana will have to face the fact that there is currently a disparity between the philosophies undergirding its Primary and Secondary systems. This is most true at the Sr. Secondary level, with its strong historically British tradition, but also at the Jr. Secondary level. The subject matter emphasis, non-integrated curriculum, instructional systems design, product orientation, separation from life, the importance of norm-referenced tests, theory not practice, little emphasis on the needs of the individual, a didactic lecture approach, and reflection not action, all characterize both the current Jr. Secondary schools and the teacher training institutions which prepare students for them. (See Appendix N for Aims of Nine Year Programme)

The Primary schools and their Teacher Training Colleges, however, have taken a different route, emphasizing the Project Method, an integrated curriculum, the integrated day, the individual child and his/her needs, meeting local needs, community based learning, experiential-hands on pedagogy and a range of approaches.

Options

There are a number of ways of dealing with the possible conflict which might result when the Jr. Secondary schools become part of a 1-9 Basic Education.

1. Keep the Jr. Secondary separate in actuality from the 1-6 (1-7) system, with a different philosophy, curricular approach, and pedagogy. This is the solution still found in most countries around the world, where secondary education is seen in a more elitist role, and as primarily preparation for further education.
2. Move the Primary philosophy and approach up to the Jr. Secondary. This is a "humanistic" solution found in communities with a strong child-centered focus.
3. Move the Jr. Secondary philosophy and approach down to the Primary level. This is an "academic" solution found in communities geared towards higher education. Subject matter specialization moves ever further down into the grades in this model.
4. Develop a middle ground, Middle School, adopting neither the primary, nor the Jr. Secondary approaches, but rather designing schools for the unique needs of the early adolescent. This solution is growing rapidly in the United States, Europe and other parts of the world.

The particular solution chosen will be influenced by or influence what organizational structure is ultimately settled on by the GOB and MOE: 7-2-3, 6-3-3, 7-4-2, or some other variation. Suffice it to say that it would greatly help any future projects and RTAs, not to mention the MOE and its various agencies, if the philosophical and structural decisions were in place in the not too distant future.

- Suggestion 4. The National Commission on Education, if called into session, might wish to confront this critical issue.

Progress to Date

Within both the original Project Documents of 1984 and the PIO/T of 1990, a major purpose was stated to be the training of teachers and administrators to implement and use the new curriculum at the Jr. Secondary level. This was to be done through a variety of mechanisms:

1. The development of Molepolole College of Education for preservice Jr. Secondary teachers, and more recently some involvement with the founding of the Tonota College of Education.
2. The use of short-term consultants from the U.S. and other countries to offer inservice training courses.
3. The development of eight Education Centres, five funded under JSEIP, to offer inservice courses to teachers and administrators.
4. Coordination with the University of Botswana and the Primary Teacher Training College; to offer preservice and inservice programs, courses and workshops.

Early JSEIP Contributions to Preservice and Inservice Teacher Education

Initially, four JSEIP RTAs were assigned to Molepolole College of Education to do limited teaching and work on developing the curriculum and professional capacity of the staff. In addition, they were seen to have part-time responsibility to work with the CD&E on curriculum development projects. These extensive expectations were soon cut back to primarily teaching responsibilities at MCE, due to the belief by the Principal that his primarily expatriate staff did not need professional development, and his insistence that the JSEIP advisors were primarily there to teach at MCE, not work on curriculum at the CD&E in Gaborone. In spite of these areas of disagreement, the JSEIP RTAs were able in the first years of the project to:

1. Help establish the Department of Arts, Crafts, and Technical Studies, with Arts later splitting off to become its own department;
2. Coordinate an effective program for administration and supervision of teaching practice for second and third year students;
3. Revise and improve the existing micro-teaching program;
4. Develop a course called "Communication and Study Skills."
5. Develop the syllabi for most of the Department of Education. (See Appendix M)
6. Helped to form faculty committees to improve the College.
7. Because of their joint appointments with the CD&E, the RTAs were able to bring in new curriculum materials being developed by the CDU.

At the In-Service level, the RTA was assigned to the Department of Secondary Education. Prior to his arrival, in-service was limited to informing field staff of developments in curriculum and seeking their occasional input. The in-service unit began its growth in 1987

and has continued to gain additional staff up to the present. Accomplishments in the early years of the project were:

1. Seventeen workshops for 525 teachers on the social studies syllabus and associated materials.
2. A microteaching workshop for 30 educators.
3. A workshop of supervision for Education Officers.
4. Four workshops on continuous assessment.
5. A workshop for Headmasters on the functioning of the Education Centres.
6. Three one-week workshops for 55 teachers on the teaching of technical studies in the CJSS. During the early years of the project, there was not enough development of new curricular materials for the in-service staff to do much in the way of in-servicing.

Preservice and Inservice Teacher and Administrator Education 1988-Present

At the preservice level, JSEIP has maintained a strong presence at MCE, in spite of being cut back from four part-time staff to two full-time. The major contributions have come in the areas of art, education and technical studies, with the art position first filled by a capable Peace Corps volunteer, who is now on the JSEIP staff.

Art Pre-Service and In-Service

*The art curriculum, as it has been conceived, is among the finest in the world.
The challenge now is to consolidate, localize, and institutionalize it.*

JSEIP Evaluators

At MCE, a complete art department, separate from the Department of Arts and Crafts has been developed. Since the founder and director of the Department served as a curriculum developer at the CD&E, in addition to her duties at MCE, and has since joined the CD&E as a JSEIP staff member full-time, there has been strong coordination of the pre-service, in-service, and curriculum development processes in this area. Among the many accomplishments in art, we would highlight the following.

1. The development of a balanced, practical and theoretical, art programme for the junior secondary schools. Strong attempts have been made to make the art programme genuinely Botswanan in nature, and to tie it to advanced training and employment. An art apprenticeship program matching students to companies has been a major innovation in pre-service teacher training, as has the Art Education and Art Employment Project, involving research into what art-related jobs exist, how job-seekers find employment, formal and non-formal training available, and valid projections of art-related employment.
2. Work with the four primary teacher training colleges to write a uniform syllabus and design a primary curriculum.

3. Discussions with UB to introduce the subject of art in the Schools of Education and Humanities.
4. The curriculum design and development of materials for the jr. secondary art programme, and work with a wide range of MCE students, TTC tutors, and curriculum developers.
5. The acceptance of arts as an examinable subject and the training of a cadre of examiners to mark the art work.
6. Numerous in-service workshops for secondary teachers, with art educators discussing art content and methods, and local craftspeople demonstrating their techniques as potters, wood carvers, basket weavers and wall decorators.
7. The graduation of 19 art teachers in 1990, with 18 finishing in 1991, 36 in 1992 and 40 students a year thereafter.
8. The formation of an MCE Art Teaching Laboratory, at which children from the town of Molepolole can receive special instruction from art students, in a pre-student teaching setting.
9. The development of a three year program in art at MCE, complete with syllabi and course descriptions.

We summarize by saying that without the involvement of the current JSEIP Long Term Consultant in art, almost none of the extensive accomplishments listed about would have occur. (See Appendix O on Art Education)

Problems and Suggestions

- Suggestion 5. While the preservice and inservice training programs have been outstanding, and the curriculum development and examinations exceptional in the area of art, there is a major concern on our part and that of others, that when the JSEIP long-term consultant leaves, there has not been sufficient counterpart training, participant training, or other aspects of capacity building to sustain the program.
- Suggestion 6. The final year of work by the JSEIP long-term advisors should be given over to the consolidation of the program in the hands of Batswana and the training of persons within the CD&E and MCE to take over the program.

Preservice Teacher Education at MCE

The JSEIP advisor is not only a 'Jack of all Trades', but a master of them also. He is THE key person in the College, and his remaining at MCE is absolutely pivotal to our efforts to reform and strengthen the institution.

MCE Administrator

The responsibilities of the JSEIP advisor to the MCE Department of Education have expanded from a part-time teaching role in the early years of the project to involvement in a wide variety of administrative and curriculum responsibilities in recent years. We would highlight the following major contributions of the JSEIP RTA to the MCE in preservice

education, the CD&E in Curriculum, and to the inservice training of teachers for primary and junior secondary schools.

1. Within the Department of Education, the RTA designed a new curriculum, with detailed course outlines.
2. A physical education programme was designed and implemented, since there was no one qualified to carry out this task at MCE. In addition he helped to design a comprehensive 9-year syllabus for the schools, along with an evaluation strategy.
3. Other departments at the college have used the RTA's expertise in designing programmes and courses.
4. The integration of common course content across the departments was a major contribution to articulating the overall college curriculum.
5. Each year, the RTA has taught courses in instructional design, learning theories, human growth and development, and test construction to the entire student body of 580 future teachers.
6. Instructional Design was introduced to the department and ten teaching modules have been developed for use in a course.(See Appendix P for Sample Unit)
7. The RTA was recently appointed the acting Head of the Education Department.
8. In addition to a full load of teaching, curricular and administrative responsibilities, the RTA has helped to prepare admission and interview guidelines, served on the Curriculum and Coordination Committee, and has conducted in-service classes on desktop publishing for the academic staff.
9. The RTA helped to design a comprehensive 9-year Agriculture syllabus for the primary and jr. secondary schools, along with a 2 year interim syllabus for MCE. In addition, he supervised a team which produced student and teachers guide materials for the syllabus.
10. In Home Economics, he prepared the guidelines for a 9-year syllabus as well as the PTTC syllabus. In addition, he conducted workshops for PTTC teachers.

The Evaluation team concurs with the judgment of the MCE administrator at the start of this section, that the RTA in the Department of Education at MCE has been nearly indispensable to the development of not only the Department, but the College in general. His design work on the general curriculum and on specific courses has been exceptional and his willingness to work on syllabi, materials development and in-service training with both the CD&E and the PTTCs has promoted education at both the primary and jr. secondary levels.

Design and Technology

The Design and Technology Program at MCE has set a standard of excellence in curriculum, syllabi, facilities and training.

MCE Administrator

The RTA in Design and Technology assigned to MCE at the start of JSEIP had multiple responsibilities.

1. To establish the department of Technical Studies.
2. To serve as the department chairperson.
3. To prepare teachers to work in the Community Jr. Secondary Schools.
4. To facilitate the production of teaching aids as needed by the lecturers and students at the college.

Following an initial assessment of what currently existed in the country and the needs at the college and in the schools, a Philosophy paper was developed. With no program in place in Technical Studies during the first year, but with students having the right to change courses, the RTA combined with the Art faculty to form the Art, Craft and Technology department, with 18 students enrolling in it as a main subject and another 40 taking it as a subsidiary subject. In 1988, Art and Technical Studies became separate departments, and the department changed its name to Design and Technology. The following are among the many tasks performed by the RTA. (See Appendix Q for Complete Report)

1. Creation of the Craft Room and Technology Lab.
2. Acquisition of P200,000 of tools for use in technical graphics, photography, screen printing, modelmaking, woodwork (hand and machine, metalwork (hand and machine), plastics, masonry, energy, mechanisms, and structures.
3. Administering and training a staff of expatriates and locals, none with a degree beyond the BEd.
4. The development of a programme and syllabi for the three year course of study at MCE.
5. Working with the Field Education Officers to help in in-service training of a predominantly undertrained teaching corps.
6. Work with the CDU until 1988 on the process and preparation of materials for the JC curriculum.
7. The institution of new concepts into Botswana: multiple activity lab, learning activity packages, work stations, student management systems, and a student information system.

The purpose of the Design and Technology program is technology exploration, not job training. Given the extensive problem of unemployment on the part of JC graduates, it is hard to say whether the program should have a clearer focus on entrepreneurship and actual job skills. It is probably too much to expect a 14 or 15 year old to be qualified for a job in the modern sector, and once they have achieved this level of education, it is unlikely that they will want to return to agricultural occupations.

In summary, the Design and Technology Programme is well conceived, well taught, and prepares the teachers well for the schools in which they will teach. We were particularly impressed with the student independent projects, which showed genuine creativity, problem-solving ability, and real possibilities of turning into real jobs for some of the graduates.

Problems and Suggestions

- Suggestion 7. The RTAs have performed their duties at an exceptionally high level, but the institutionalization and localization of their work and of their departments has been hindered by the lack of qualified counterparts.
- Suggestion 8. For the first time, the College is under the leadership of a citizen of Botswana. After conducting interviews, looking at the historical development of the College, and seeing the needs for the future, we believe that it is critical that local leadership be maintained. In addition, we recommend that the Principal be taken to the U.S. to visit a variety of teacher training colleges on a short-term participant training program.
- Suggestion 9. The requirements to become a College teacher at MCE appear to be in need of some fine tuning. Many otherwise qualified locals appear to be eliminated from the opportunity to teach at the college through arbitrary time-in-place requirements.
- Suggestion 10. The science program at MCE is still taught as three separate subjects, even though the Jr. Secondary school curriculum calls for Integrated Science.
- Suggestion 11. In addition to the localization of the leadership of MCE, we believe that the dependence on expatriates in the teaching and administrative staff should be lessened as rapidly as possible.
- Suggestion 12. Our interviews, if representative, would indicate that the college is theoretical in nature, with limited connections to the real world of Botswana and the schools. The curriculum, while sound theoretically, is based on models and information almost totally outside the national context. The recently appointed College Curriculum Committee should pursue the large and difficult topic of how to make the College more responsive to the needs of the environment.
- Suggestion 13. With the addition of Tonota College of Education, there will be an increasing need for a coordinated program between the two institutions. This is also true of the need to coordinate with the Primary Teacher Training Colleges and with the University of Botswana.
- Suggestion 14. In spite of previous objections, there would appear to be a need for in-servicing the faculty of the College. This is particularly true of the subject matter departments, where many faculty have had limited training in pedagogy, curriculum design, testing and measurement, instructional design, and other related topics.
- Suggestion 15. As mentioned in the essay at the start of our chapter on pre-service and in-service teacher and administrator education, Botswana is in need of both a unified philosophy of education and a coordinated curriculum strategy to implement that philosophy.

While the RTAs from JSEIP were jointly appointed to both MCE and the CD&E, there was excellent communication, at least in their particular areas of expertise. When they were no longer physically present at the CD&E on any regular basis, the MCE began to "go its

own way," as far as the curriculum is concerned. The MOE, the JSEIP staff and administrators, and the MCE all agree that it is difficult, if not impossible to serve two masters equally well, so we are not recommending continued joint appointments. The issue of how to ensure that the teacher training colleges are involved in the design, implementation, evaluation, trialing and in-servicing of teachers on the new curriculum is of paramount importance, however.

- Suggestion 16. We recommend that procedures be put in place to ensure that MCE, University of Botswana and Tonota faculty are included on all curriculum panels, and are involved in all steps of the curriculum development process.
- Suggestion 17 The Education RTA at Molepolole is recommending the start of a demonstration school at night on the campus of the MCE for JC dropouts. Such an institution would be an excellent practice site for student to observe and practice teach, prior to their full-time student teaching experience. We concur with this recommendation.
- Suggestion 18. Given the shortage of qualified Botswana teachers at the CJSS, we concur with the discussed plan to have an internship year as one of the three years at MCE. Such internships have worked well in other countries, if there is daily supervision by administrators, and if a mentor teacher in a nearby classroom is available to help. There is also the need for close supervision by faculty from MCE.

Inservice Education of Teachers and Administrators

The new Education Centres are one of the most exciting inservice innovations to be found anywhere in the world.

JSEIP Evaluator.

No one seems to take credit for the original idea of the Education Centres, but there is unanimous agreement among teachers, administrators, field education officers, and RTAs that they are proving to be a dramatic success. If JSEIP did nothing else but fund and equip the building, and staff five Education Centers, we would be inclined to call the overall project a success. Of course, it has done much more. From our knowledge, there are few, if any institutions like them in the Third World. Even by standards of the wealthy nations, they are well equipped, well conceived institutions, which have already had a major effect on the quality of primary, secondary and non-formal education in Botswana. We start by mentioning the Centres, as we believe they symbolize the commitment to in-service education on the part of the MOE, which has been facilitated not just by JSEIP, but also by the PEIP project. The countless workshops that have already been held at those centers which are completed, appear to be exceedingly popular with teachers and administrators, and we anticipate a major payoff for the comparatively small investment.

When the new JSEIP Inservice Teacher Education Specialist arrived at post in August, 1987, there were 8 inservice teacher advisors involved in a pilot project in the Francistown area. In 1990, there are 34 posts filled, covering the whole country, with 21 vacant posts to

be filled by the end of the year. This dramatic growth is a strong indication of the commitment of the GOB and MOE to inservice education. A great deal of credit for the acceptance of the need for inservice of teachers and for the growth in the number of Field Education Officers (FEOs) is given to the external assistance of JSEIP and PEIP by MOE officials. With the Department of Teacher Education having been formed under capable leadership, in new offices, and with the promise of 55 FEOs by the end of 1990 and 106 by the end of 1993, it is certain that teacher and administrator inservice is ready to enter a period of dramatic growth and impact. This will be even more true, when all eight Education Centres are open within the next year, since those that are open are already booked to capacity.

Problems and Suggestions

While everyone appears to be in agreement that the inservice function be fully transferred from the Department of Secondary Education to the Department of Teacher Education, there appear to be some difficulties in making the actual transfer. These are due, in large part, to the same problem of the Job Evaluation process of several years ago, and to a lesser extent to historical roles in Secondary Education of officers serving curriculum, inspection and in-service teacher education roles.

- Suggestion 1. It is critical that this issue of the placement of all FEOs be resolved as soon as possible, so that the Department of Teacher Education can fulfill its outstanding potential. (See Appendix R for List of Posts)
- Suggestion 2. It has been stated that the Office of Management and Budget was to have conducted a review of Job Placement and Salaries in 1989 or 1990. Without a review and possible reclassification, it appears that the inservice functions might continue to be hampered.
- Suggestion 3. A related matter to the job reclassification is the loss of housing by the FEOs when they no longer hold the title of SEO. This will mean a considerable investment in housing, if the MOE is to attract and retain high quality FEOs, particularly in areas where appropriate housing is unavailable. (See Appendix S for Housing Needs)
- Suggestion 4. The appropriate distribution of FEOs by subject matter is critical. Currently some subject areas have only one FEO, and in the case of Art there is no FEO on board.
- Suggestion 5. The relationships between the FEOs and the staff at CD&E needs clarification, so that as new curricular materials are being developed, FEOs are involved at all levels, and thus are supportive of the final products. This has not always been the case up to the present time, but will become increasingly important as the system decentralizes and the number of FEOs grows to over 100 in the next three years.
- Suggestion 6. Rules and Regulations governing the CJSS have been written with the help of a JSEIP advisor, but they are not yet official or legal. This needs to be completed as soon as possible.

The two JSEIP RTAs in inservice teacher and administrator training have worked closely with their Departments and have had some success in counterpart on-the job training.

As with other parts of the JSEIP project, the problem has not been a lack of money to do any particular job, but rather the lack of qualified counterparts with whom to work. There has also been a good working relationship with the British Council/ODA Teachers as In-service Tutors Project. Among the many tasks accomplished by JSEIP advisors in Inservice Education and other JSEIP staff have been the offering of numerous workshops. The following lists is not complete, but gives some indication of the nature and extent of those offerings. Some of the workshops have been given on an annual basis, especially those dealing with new Headmasters, due to the rapid expansion (twenty to thirty per year) of the CJSS. (See Appendix T for 1990 Listing)

- Nauonal Field Education Officers Conference
- Orientation for the Multi-Purpose Classroom, D&T
- New Headmaster's Workshops
- Workshops for bursars, typists and other support personnel
- Art Curriculum Workshop
- Art JC Item Writing
- Social Studies Panel
- Social Studies Writer Conference
- African Social Studies
- Orientation for new Expatriate Teachers
- Education Officer Workshops and Seminars
- English Workshop for new Form 1 curriculum
- English FEO Workshop
- Home Economics Panel workshop
- Physical Education Teachers workshop
- Primary Teacher Training Colleges Curriculum Review
- Panel Workshop
- TOT (Training of Trainers) Level I Conference for FEOs
- TOT Level II Conference for FEOs
- FEO Planning Conference.

Not only have a wide variety of workshops been held by JSEIP staff, but the evaluations of them have generally been excellent. They appear to be both state of the art in material, as well as highly informative and involving in format. The following Inservice Staff Development Workshops are planned for the rest of 1990, and again give an indication of the breadth of in-service work being done in conjunction with JSEIP.

- Inspection and School Evaluation Workshop for SEOs
- FEO Planning Meeting
- Level Two Training Workshop for New FEOs
- Level Three Training Workshop for FEOs
- Science and Technology Careers for Women-Workshops
- Teachers College, Columbia University/Peace Corps Maths/Science In-service Workshop
- Workshop for heads of sr. secondary science departments
- International Trade Fair

On the broader front JSEIP is proposing a National Inservice Conference in November, 1990 or February, 1991, with the topics of staff development, institutional development, international staff development programmes, education records, student growth and achievement, reflective school practitioners, empowerment of teachers, "good teaching" practical skills, the headmaster's role in instruction, and linkages between the various levels of education.

The JSEIP RTAs have been involved in the preparation of a wide range of training materials as well as rules, regulations, and administrative documents. These appear to have been extremely valuable, particularly to new headmasters coming on board at the last minute to the CJSS.

Problems and Suggestions

- Suggestion 7. We recommend strong support for the National Conference on Inservice Education, as the inservice system appears to be at the "take-off" point, and such a conference, featuring local and international experts, could provide a major boost to getting the expanded FEOs off on the right foot.
- Suggestion 8. We were impressed with the Self-Studies conducted by the staff of the four PTTCs, and recommend that a similar Self-Study and Accreditation process be put into place for the Jr. Secondary Teacher Training Colleges. A self-study guide has been developed in Primary Education, based on similar models in the United States. An excellent Middle Level (Jr. Secondary) manual could easily be adapted to Botswana.
- Suggestion 9. A Curriculum Coordinating Council is being formed to include UB, Agricultural Education, Vocational Education, MCE, Tonota, and the PTTCs. We believe that these and similar official or unofficial groups can have a profound impact on developing and maintaining a strong curriculum, well coordinated with the various pre-service and in-service training centers.
- Suggestion 10. A National Council for Teacher Education is currently developing, and once again we concur that it can serve an important function of keeping teacher educators involved at all levels of curriculum development, in-service education and other important functions.
- Suggestion 11. A couple of administrative details, not directly concerned with in-service education, but which impact the work of the department, is the recommendation that new headmasters for the CJSS be appointed many months, and preferably a year ahead of time, so that they can be intimately involved in building, getting to know the community, selecting and training staff, and equipping the building. Secondly, the DSE and UTS might consider placing a few experienced teachers in each school, as it appears that some new schools not only have a new headmaster, but all new teachers.

Suggestion 12. A study of the use and appropriateness of interactive video for use in the preservice and inservice training programs for teachers and administrators appears warranted.

In summary, we believe that JSEIP has made a profound and positive contribution to the preservice teacher education at MCE and to the inservice training of teachers and administrators. We would concur with MOE officials who state unequivocally, that without the help of JSEIP, many programs would not have even started, and others would not have advanced to the levels found today.

VI. EDUCATIONAL RESEARCH PROGRAM

Background

JSEIP and MOE staff recognized, at an early date, the need for original research on education in Botswana relevant to developmental initiatives currently underway. Consequently in 1987, they initiated an educational research program, in collaboration with project consultants and with the IEES staff member assigned to the GOB, which has continued to the present. The importance of such research was recognized by USAID and the GOB in the PIO/T of 1990 (which refined and extended JSEIP through the end of 1991) by the inclusion of research as one of the functions inherent in the project purpose of institutionalizing "the capacity of the MOE to develop, manage, and maintain the new instructional component of the junior secondary educational system" (pg. 4).

JSEIP Research Activities

Research sponsored (at least in part) by JSEIP has ranged from education system-wide research useful for broad educational planning and policy formation, through studies of organizational issues in the MOE and programmatic changes in the junior secondary education system, to very focused studies on the dynamics of specific classrooms useful especially in curriculum development and implementation and in improving instructional practice. The wide range of research projects and publications, with illustrative examples, are described here in more detail in Appendix U.

The large-scale national education studies are now being assumed primarily by the MOE's Planning Unit with IEES assistance, while JSEIP research is now focusing on a wide variety of classroom studies as represented by the recent publication of *Curriculum in the Classroom* (1990) by CD&E, a compilation of reports of the first systematic classroom research carried out in Botswana. These studies portray the current condition and behavior of students' and teachers in classrooms in Botswana, and will have practical utility in ongoing efforts to develop the JS curriculum and to improve instructional practices.

The JSEIP research program focusing on the JS classroom is probably now peaking in its productivity. In addition to the many research publications and reports cited in Appendix E, many more will soon be forthcoming during the remaining months of JSEIP. For example, the *International Journal of Education Research* is committed to publishing an entire issue on educational research in Botswana. In addition, a second CD&E publication entitled *Influences on Quality Instruction*, a compilation of little-known research reports (because of their original publication outside the country) on education in Botswana is currently in the works.

Purposes of Educational Research in Botswana

Applied educational research, if done well and on a timely basis, can provide a basis in objective knowledge for the following MOE functions:

1. Educational planning and policy formation, such as in planning and setting policy for the structure of public education.
2. Educational decision making, such as evaluative research on the functioning of Education Centers and decisions about their number, location, and revision to their programs.
3. Curriculum development and implementation, such as needs assessment and curriculum as applied in the classroom.

The educational research program discussed below is therefore a tool designed to serve directly the information needs of the MOE to plan, to set policy, to make management decisions, and to develop and implement curriculum in Botswana. Its agenda is driven by immediate practical considerations, not by more abstract questions about basic educational processes and issues that are more appropriately undertaken by university and private sector institutions, both in Botswana and abroad.

In addition to the pursuit of original applied educational research in Botswana, for Botswana, described above, there is another useful function that can be performed by local educational researchers. That is to review and analyze the international educational research literature for substantial knowledge about educational topics of relevance to educational developments and issues in Botswana so that the benefits of knowledge discovered abroad can be applied to the solution of local problems. Some topics of relevance might be research on textbook design, the organization of education in the middle years of age (i.e., 10 through 14), and incentive programs in education applicable to students, teachers, and/or schools.

Problems and Suggestions

Problem 1: Institutionalizing Research Capacity in MOE

Though the JSEIP research program has blossomed in just the past few years and is widely appreciated within the MOE and elsewhere, it will require intensive and long-term effort to institutionalize as an ongoing presence in the MOE. As of the present, educational research in Botswana has been initiated and reported mostly by foreign nationals expert in research methods, analysis, and interpretation.

- Suggestion 1. It is suggested that the MOE institute a ten-year plan to create deliberately and incrementally educational research posts. They should be positioned sufficiently high the status and salary hierarchies to be appealing as a career path for talented Botswana to become qualified in the role of principal investigator who are responsible for investigations from conception to reporting. It is also suggested that posts for research technicians be created in sufficient number to support the work of principal investigators, and that they be positioned suffi-

ciently high in the personnel structure to assure the recruitment of qualified individuals, and to retain them once they become skilled in the technical aspects of conducting research projects.

- Suggestion 2. In building an educational research capacity, it is suggested that plans for developing a qualified staff of principal investigators consciously build a group of investigators grounded in several disciplines such as curriculum development and instructional design, educational psychology (including capabilities in cognitive process, human development, and measurement), educational sociology, educational anthropology, and educational economics. While it will probably not be possible to develop such broad-based representation simultaneously, any inclination to concentrate solely in any one or two disciplines should be avoided.
- Suggestion 3. In building a MOE educational research capacity over the coming decade, it is suggested that the talent and resources represented by JSEIP, PEIP, IEFS, and other education development projects such as BEC, continue to be used to the full extent possible, and that MOE personnel, either existing or specially appointed for this purpose, be assigned to research functions in collaboration with project personnel. Those showing special promise for growing into leadership roles in educational research in Botswana should be guided into, and supported in, receiving doctoral level research training.

Problem 2: Administrative Organization of Research Function

At the present time, the educational research function of MOE has not been placed solely in any one existing unit. Much of the national broad-gaged policy-relevant research has emanated from the Planning Unit attached to the Permanent Secretary's office, while some of the research particularly relevant to curriculum development has emanated from the CDU and the RTC. Initiative for much of this and other research has emanated from the JSEIP COP's office. While a remarkable amount of high-quality and useful research has blossomed quickly under these circumstances, it is probably a function of pressing needs, opportunity, lack of constraints, and the interest and initiative of individual persons. Since this set of special circumstances is unlikely to remain for long, the present research program could easily disappear with only reports from past inquires remaining on the shelves.

- Suggestion 4. It is suggested that the MOE undertake a careful study of particular kinds of research needed in the foreseeable future to support educational planning and policy formation, management decisions, and curricular development under its purview. Consideration should be given to the development and maintenance of (a) detailed, current, and valid national data bases encompassing basic statistics and indicators of the functioning of the educational system, (b) policy research (c) program evaluation research, and (d) curriculum development and implementation research.
- Suggestion 5. It is presently the case with respect to the Education Statistics Unit of the Central Statistics Office, the Ministry of Finance and Planning, it

is suggested the national education statistics function continue to be located in a unit separate from the educational policy analysis function. This is so that the validity of the statistical data is not subject to suspicion because data collection, tabulation, and presentation might be distorted by particular policy perspectives. Individuals and governmental units with varying policy perspectives should all be able to trust the integrity and quality of the statistical data bases. The study suggested in Number 4 could also examine whether the need for educational statistics can be met by the very small Educational Unit presently operating, or whether a unit with greater capacity for data gathering, analysis, and reporting would better serve the national interest.

- Suggestion 6. With respect to the organizational units to which educational research functions should be assigned, it is suggested that several units be considered. For example, a statistics unit might continue to be organized under the Central Statistics Office, while providing need data to the Planning Unit in the Permanent Secretary's Office. However, the capability of Planning Unit to undertake specific research related to educational planning and policy formation might be strengthened by either (a) adding qualified researchers to the staff, and/or (b) granting it additional authority and funds to contract specific research studies as needed to independent agencies, such as firms in the private sector and to qualified researchers attached to Botswana's institutions of higher education (especially UB). It is further suggested the CDU have the authority, qualified staff, and funding to conduct research directly supportive of its mission. Finally, the RTC might be upgraded in its capability and responsibility for (a) educational research on issues requiring management action, and (b) program evaluation research. It is possible that this might work best if the RTC is separated into two centers, an Educational Research Center and a Testing Center.

Implications for Educational Research Under BEC

The PID for BEC goes much further in its recognition of the importance and value of educational research than did the Project Paper for JSEIP. The Preliminary Logical Framework (Appendix A, pg. 3) in the Project Paper identifies a "strengthened capacity of research and evaluation on curricular issues" as a proposed output, whereas JSEIP was silent on the research function until it was built specifically into the April 1990 PIO/T extending JSEIP. BEC, as presently conceived, therefore provides for some continuity in the educational research function, though not nearly as broadly as suggested in the foregoing section. This is definite progress, however, and it is suggested that the Project Paper team be directed to give much further thought to planning the research function in such a way that it can contribute to capacity building on the part of MOE with Botswana being trained to move into leadership roles.

A number of specific and important lessons have been learned from the JSEIP research program which have clear implications for BEC's continued presence in this function of the CD&E Department. These specific points are contained in the second and third pages of the document incorporated here as Appendix V.. More globally than these important lessons is the clear implication that BEC must plan specifically for the continuance and nurturance of the research function, especially in the CD&E, or it will not likely be sustained. The PID for BEC does not contain in its provisional staffing plan (pg. 14) a TA position that appears to be directed, even in major part, to the education research function. It is suggested that detailed BEC planning consider building research responsibilities into one or more TA positions.

VII. LESSONS FROM JSEIP FOR THE BASIC EDUCATION CONSOLIDATION PROJECT (BEC)

The final chapter of this evaluation is to attempt to draw some lessons for the Basic Education Consolidation Project (BEC) from the experiences of JSEIP. Throughout the first six chapters, we have made a large number of suggestions on the topics of organization, structure, capacity building, linkages, curriculum development, instructional design, pre-service teacher training, in-service teacher and administrator training, and a host of other topics. In a sense, all of those suggestions come from the JSEIP experience. Rather than repeat all of them, we will bring to the fore those which appear to be most critical for the successful functioning of any future project. These lessons come from both the successes and difficulties encountered by JSEIP and are neither unique to the project nor meant as an implied criticism of it.

- Suggestion 1. Any project must be first and foremost Botswana designed and developed. Any activity within a project should have a deep, firm commitment on the part of the MOE and not be something into which they were talked, because it has "worked" somewhere else in the world or is the "pet project" of a particular person.
- Suggestion 2. Project Papers must be clearly focused and agreed upon by all parties. There needs to be flexibility built in, however, so that as national needs change or it becomes obvious that something is not working, there is the possibility of redirection without being evaluated negatively on unrealistic, untenable, or out-of-date project commitments.
- Suggestion 3. "Some of the initial project staff appeared to believe that nothing existed here prior to their arrival." This statement was made by several different MOE officials, and we would once again caution as to the need for contextual understanding, needs assessments, and months of preparation, prior to moving forward on any major project.
- Suggestion 4. Realistic expectations and time-lines are important to the measurement of any successful project. Even if the initial 2 1/2 years of the Project had gone more successfully, it is unlikely that all the curricular and training tasks outlined in the original project design could have been accomplished. There were still too many personnel, time and other constraints for such an ambitious project to succeed with the time frame allotted.
- Suggestion 5. The nature of multiple contractors and reporting lines has been alluded to by numerous people throughout this evaluation. Although the structure is complex, it has worked for the past two years. On the positive side, a complex set of U.S. and GOB set of reporting lines,

makes sure that everyone is briefed. We are not necessarily recommending only one university or contracting firm for any future project, but JSEIP appeared to have "too many masters: GOB, MOE, USAID-Washington, USAID-Botswana, FSU, Howard, SUNY, IEES.

- Suggestion 6. Flexibility on site for the Chief of Party to hire local staff, when appropriate and to have more control over the hiring and firing of long-term RTAs and the selection of short-term consultants, would appear to be an important lesson from JSEIP. The issue of a coherent philosophy and compatible personalities has come up from time to time. One solution is to have a clear perspective on what the project needs and have only one name submitted for approval in Botswana, rather than submitting several names, who on paper may be equivalent, but who may differ dramatically on acceptable philosophical or personal grounds. The attempt at learning at least minimal Setswana has been suggested as a goal for long-term personnel in the future.
- Suggestion 7. While BEC is primarily a curriculum project, it has major management and teacher/administrator training functions. In other words, it will again be spread across the MOE and strong linkages will need to be formed and maintained. JSEIP experience would indicate that joint appointments between Departments are generally neither preferable nor very workable, but that one or more liaison RTAs and local staff might help prevent the project from becoming a series of isolated individuals or entrepreneurs. There also needs to be clarity as to how the overall project interfaces with each unit in the MOE, so that unrealistic expectation and role conflicts are kept at a minimum. Curriculum development cannot be done in a vacuum, so continuous efforts must be made in BEC to involve the PTTCs, MCE, Tonota, UB, DPE, DSE, and DTE at all stages of the development process.
- Suggestion 8. With ten years of PEIP and five years of JSEIP, not to mention the numerous other international programs who have provided participant training, there would appear to be a growing cadre of qualified Botswana to fill almost all counterpart positions. Under BEC, it would be of great importance to have counterparts in place, prior to the appointments of RTAs. Counterpart training cannot be left to chance, but must be a regular, formal part of every RTA's job, in both the informal on-the-job training part, but also through formalized workshops. Early participant training for counterparts is preferable to that which might come late in an RTA's stay. The program also needs flexibility to train persons, regardless of level of previous education.
- Suggestion 9. A regularly meeting advisory board to the project could be an important group to keep the project on task, and make sure that issues were confronted promptly and not allowed to simmer. Organizational, personnel, and other issues could be dealt with promptly before paralyzing the project.

- Suggestion 10. The role of a project as an "Intervention" or "Catalyst for Change" needs clear explication ahead of time. If the stakeholders are not actively involved or committed, or if counterparts have not been trained, it is likely that many interventionist strategies "will depart with the consultant on the next plane." There is a regular temptation in such projects to do the work oneself, rather than develop the capacity of others to do it. There can be no question as to which strategy has the longer term impact or staying power.
- Suggestion 11. The filling of actual posts by RTAs is an important issue to be confronted. Wherever possible, it would appear to be preferable to fill shadow posts and have locals in the permanent positions. Persuasion rather than organizational power is preferable in any long term change process, particularly when exercised by "outsiders."
- Suggestion 12. The MOE needs to fulfill an important information and public relations function on what the project is doing and what future plans and hopes are for it. This prevents a feeling in the field of top-down reforms or inappropriate, untimely interventions.
- Suggestion 13. The management of a multifaceted project is a time-consuming and difficult task. The project staff need a clear identity and working relationship with each other, while at the same time working within the organizational infrastructure, so they are not seen as a "separate culture." With project staff working in several departments, schools and colleges around the country, the role of chief of party becomes an obvious full-time role and a difficult one to fulfill. A balance must be struck between excessive meetings and reports and the need to maintain communication and a level of commitment to a joint effort.
- Suggestion 14. Travel funds for important Botswana to visit related programs in the United States would be very helpful. BEC could consider funding at least part of the travel, as Botswana funds are limited for such short-term travel grants.
- Suggestion 15. There has not been enough attention, resources or time built into previous grants for curriculum dissemination and diffusion, after the materials have been developed.
- Suggestion 16. The staff of the MOE/GOB prefer a continuity of philosophy and personnel under BEC, and if that is not possible, the grant should include sufficient time for new staff to develop the necessary contextual understanding.
- Suggestion 17. Posts for BEC staff and counterparts could best be negotiated ahead of time with the Ministry of Finance, as there is a 3 month gap at the end of JSEIP/PEIP.

APPENDICES

JSEIP EVALUATION COMMITTEE

August 13-31, 1990

Evaluation Officer, Chairperson
Team Leader
Member Evaluation Team
Representing FSU
Representing Min. of Education
HRD/Project Manager

F. Shortlidge, USAID/Acting Director
R. Kraft, MSI/Univ. of Colorado
J. Capper, MSI/Private Consultant
E. Boe, Univ. of Pennsylvania
V. Mogegeh
B. Belding, USAID/HRDO

DRAFT

PIO/T No. 633-0229
Attachment 2

Objective: To provide technical expertise for the second summative evaluation of JSEIP

Statement of Work

In cooperation with officials in the Ministry of Education (MCE), the contracting institution, Florida State University (FSU), and USAID/Botswana, the two experts will perform the following tasks toward the completion of a summative evaluation report on the implementation of JSEIP:

A. Evaluate progress to date of JSEIP and prepare a Report in accordance with format as determined by the Education Officer. Priority attention should be focused on project activities most directly related to the following JSEIP objectives:

1. Strengthen the capacity of the Curriculum Development and Evaluation Dept (CD/E Dept), with particular attention to the Curriculum Development Unit (CDU).

2. Assist the MOE in the Revised Curriculum and Instructional Program at the junior secondary level.

3. Assist in the Preservice and Inservice Training Program at the junior secondary level.

This Report should assess which project objectives are still realistic, with specific reference to the measurable outputs and their impact on the targeted groups. Special attention should be placed on assessing the institution building aspects of the project. Determine and explain why different outputs likely will or will not be achieved. The evaluation should also determine a desired and feasible end-of-project status (EOPS) in light of the current institutional and personnel constraints, and provide recommendations for achieving this updated EOPS. Also the report should discuss any intended outcomes which will not be achieved and the significance of this shortfall.

B. One of the most important areas Mission is concerned with evaluating are the linkages formed between the Curriculum Development Unit and other important MOE units (e.g. RTC, MCE, DTE, DPE, DSE, Planning) and processes put in place which are judged critical to JSEIP achieving some measure of sustainability and institutionalization.

C. -- Extract and describe important lessons from the JSEIP project that may be important for future education projects in Botswana or elsewhere.

D. Assess the effectiveness of the participant training program at FSU and the University of Botswana (UB), in terms of program relevance.

E. Offer suggestions on the need and advantage of continuing JSEIP project activities in the follow-on USAID BEC project.

F. Assess success of education center development component (construction and program strengthening) and its role in support of curriculum dissemination and teacher training.

- Team of 2 experts will work in conjunction with a representative of the implementing institution (FSU) and a GOB/MOE appointee.
- Draft Report containing findings, conclusions and recommendations is due last week of consultancy for Mission review and suggestions for a final draft.
- 10 copies of the final report are to be submitted to Director, USAID/Botswana 3 weeks after departure from Botswana

Relationships and Responsibilities

A. Evaluation Team in Botswana

1. Evaluation Officer, Chairperson (USAID Assistant Director)
2. HRF Officer/Project Manager
3. Contract Team Members (2)
4. Representative of Florida State University
5. Representation of MOE

B. Responsibilities of Contract team

1. Work closely with Project Manager and Evaluation Officer at Mission
2. Clear Interviews and Visits with FSU Chief of Party, USAID Project Manager or Concerned MOE Official, as Appropriate, in advance

Period of Performance

A. Three Weeks in Botswana, o/a Aug. 15, 1990 - Sept. 5, 1990.

Background Documentation (should be received prior to arrival in Botswana)

- JSEIP Project Paper
- JSEIP Mid-Project Evaluation
- PIRs for the period 1988 to 1990 (1 or 2 years)
- Contractors (FSU) Progress Reports: 1988 to 1990 (a sample)
- Other critical reports, e.g. the Nagel Report, Yoder Report on School Effectiveness Research,....

PERSONS INTERVIEWED AND SITES VISITED**GOVERNMENT OF BOTSWANA (GOB)****Ministry of Education (MOE)**

Doc P. Sephuma, Acting Deputy Permanent Secretary

Planning Office

E. Odotei, Chief Planning Office

Department of Curriculum Development and Evaluation

P. Ramatsui, Chief Education Officer

F. Leburu, Principal Curriculum Development Officer

S. Khama, Principal Research Testing Officer

S. Muahi, Research and Testing Center

J. Maphomisa, Guidance and Counseling

V. Mogegeh, Mathematics

D. Ratsatsi, Educational Publications Unit

Department of Teacher Education

T. Mogami, CEO/ Teacher Education

M. Mbaakanyi, Acting Principal of MCE.

Primary Administrators

Lesedi Primary School

Secondary Administrators

Marang Jr. Secondary School

Secondary Teachers

B. Molelu

L. Tchireletxo

O. Gabasiane

Jr. Secondary Teachers

William Augustine Mphande

Nianasoondyran Mooneesawmy

Harrison Siabukandu

Teboho Mfana

Jr. Secondary Education Improvement Project (JSEIP)

W. Snyder, Chief of Party

T. Nitko, Research and Testing

J. Bowers, Research and Testing

K. Noel, Instructional Systems Design

L. Ives, Art

B. Vogeli, Instructional Media

S. Rollins, Guidance and Counseling

W. LeBlance, English

L. Scheffers., English

J. McDonald, Secondary Education

R. Nesbitt, English

D. Mullaney, In-Service Teacher Education

USAID/Botswana

J. Hummon, Director

R. Shortlidge, Deputy Director

B. Belding, Human Resources

J. Meyer, Executive Officer

U.S. Government Projects

M. Evans, Chief of Party, Primary Education Improvement Project (PEIP)

S. Burchfiel , Chief of Party, IEES

Mr. H. Philips Associate Peace Corps Director, Education

Schools, Colleges and Universities

Lesedi Primary School in Gaborone

Primary in Gaborone

Marang Jr. Secondary School

Molepolole College of Education

Mochudi Education Center

University of Botswana

DOCUMENTS REVIEWED

- Junior Secondary Education Improvement Project: Mid Project Evaluation*
The Status of the Primary Teacher Training Colleges in Botswana
Curriculum in the Classroom
Improving Educational Quality: A Global Perspective
Junior Secondary Education Improvement PID
Art Education in Botswana
Teacher Education: Botswana Education and Human Resources Sector Assessment
Botswana Brigades
Education for Development in Botswana
Primary Education Improvement Project Interim Evaluation
Integration between Education and Work at Primary and Post Primary Level-The Case of Botswana
Education and Employment in Botswana
A Needs Assessment for Educational Research in Botswana
Needs Assessment of English Language Proficiency Project Report
Art Education and Employment in Botswana
Education Statistics: 1988
Botswana: Strengthening Local Education Capacity Through Community Involvement
Report on the Brigades in Botswana
National Policy on Education: 1977
Education and Culture
A Philosophy of Technical Studies for The Community Jr. Secondary School in Botswana
A Preliminary Study Assessing Training Needs of Jr. Secondary School Leavers.
The Cost Effectiveness of Technical and Vocational Education and Training in Botswana
Botswana: Basic Education Consolidation Project: Project Implementation Document
Tonota College of Education: Tentative Programme of Study
Evaluation Guidelines for MOE
Molepolole College of Education Regulation, 1990
Sub-Saharan Africa: From Crisis to Sustainable Growth
Basic Education Action Plan: The Africa Bureau

Botswana: Population Facts

Botswana: Education and Human Resources: Sector Assessment. June, 1984

National Development Plan VII: Education and Training, Oct. 1989

National Development Plan: 1985-91, December, 1985

School Effectiveness Research: Symposia

University of Botswana: Annual Report, 1988-89

Botswana: PEIP, Phase 2. March 1986

Education for Kagisano: April, 1977

Supplementary Report: July, 1979

Ministry of Education: Second Biennial Report: 1987/88 Education for the Future

Evaluation Guidelines for the Formative Evaluation of Programmes and Activities of the MCE

Famous Men of Africa

JSEIP Project Documents and Professional Papers

Organizational Issues in Curriculum Development in Botswana, July1, 1990

New Educational Resource Centre in Gaborone

JSEIP Job Evaluations

Jr. Sec. Education Improvement Project Work Plan Oct.1987,Dec. 1988

JSEIP Project Outputs: February, 1988

Internal Mid Project Review; June, 1987

Notes for JSEIP Internal Evaluation

Botswana Contract: JSEIP

Project Grant Agreement between the Republic of Botswana and the United States of America for JSEIP, April, 1985

JSEIP Sixth Progress Report, Oct. 1989-March, 1990.

JSEIP Fifth Progress Report

JSEIP Seventh Progress Report,

JSEIP Eighth Progress Report

Commodity Report, July 1990

Community Concerns: Public Expectations and Educational Development in Botswana, July, 1990

Implementing Criterion Referenced Examinations in Botswana, August, 1990

Criterion-Referencing Jr. Secondary School Assessments, 1989

Policy and Organization in Curriculum Development in Botswana, 1989
Guidance and Counselling: Training of Guidance Practitioners, August, 1990
Enriching the Tradition of Educational Development in Botswana, August, 1990.
Status of Testing in the Instructional Process, August, 1990
Educational Research in Botswana, August, 1990
Institutional Development of the CDU during JSEIP Five Years, August, 1990
Adapting an ISD Approach to Curriculum Development and Change in a Large Scale Educational Project, JSEIP, August, 1990
Some Issues in Designing a "Practical Science" Curriculum

Teaching Training, Pre-Service and In-service JSEIP Produced Materials

Headmasters Training, 1989
Headmaster Training Evaluations
Secondary School Headmaster's Manual, June 1989
MCE Department of Design and Technology
MCE Unit One: Introduction to Instructional Design
Unit Two: Levels of Instructional Design Activities
Unit Three: Writing Aims and Instructional Objectives
Unit Four: Developing/Selecting Instructional Materials and Teaching Aids
Unit Five: Specifying Teaching Methods, Techniques and Learning Activities
Unit Six: Relating the "Events of Instruction" to Lesson Preparation
Unit Seven: Planning and Delivering the Lesson
Unit Eight: Assessing the Lesson and Instructional Materials/Methods
Unit Nine: Providing Feedback, Remediation and Enrichment
Unit Ten: Revising the Lesson and Instructional Materials/Methods
Field Education Officers Self-Evaluation
Level 2 In-Service Workshop
MCE Department of Education Curriculum, June 1989
MCE Education Department Course Outlines, 1988
MCE Art Programme
Social Studies Teaching Methods-Trial Edition

Curriculum Documents

Agriculture Syllabus: Standards 1-9

Jr. Sec. Art Syllabus and Teacher's Guide: Unit 2: Colour Design/Painting

Unit 1: Drawing

Unit 4: Commercial Art

Unit 5: Sculpture

Unit 3: Crafts

Art in Botswana Newsletter

Jr. Certificate Art Examination Report

Revised Jr. Sec. English Syllabus

Jr. Sec. English for Botswana

Workbook 2: Form Two, Term One and Term Two.

Student's Books, Form 1 and 2, Terms 1 and 2

Teacher's Handbook

Workbook

Nine Year Social Studies Syllabus

Design and Technology: A Curriculum

Social Studies: Revised Jr. Secondary Syllabus

Science by Investigation in Botswana: A Teacher's Guide

Science by Investigation in Botswana: Pupil's Course Book 1 Modules

Standard 1-9 Science Syllabus

Longman Setswana 1, Terms 1 and 2

Setswana Jr. Sec. Revised Syllabus

CONSULTATION REPORT

INTRODUCTION

One of the hallmarks of every profession is its commitment to continuing education or staff development. In a rapidly changing world featuring exciting and challenging new developments in knowledge and skills it is critical that professionals be exposed to and develop competencies in these new areas. The acquisition of new skills and knowledge will allow the counsellor professional to meet the needs of their clients.

Many professional entities require the attainment of a specific number of in-service 'credits' to continue to practice their profession. This continuing education requirement reflects the contract between the profession and society to provide the highest level of service. This implied contract is true for all professions: teaching, counselling, medicine, law and so forth. To be unable to provide a strong and viable program of continuing education is to break the contract to make the best service available and, thus, violate the trust of those whom we serve. With this philosophy as a guide the following model was developed.

Guidance is a service and is unique in the education system. The service that is provided is assisting teachers, students and parents to navigate the educational waters. This report is written with this unique notion of counsellors as navigators in mind.

Currently in Botswana many schools have a guidance teacher and/or a teacher-counsellor in the schools. This person may either volunteer for the position or, more likely, be chosen by the headmaster. Headmasters need to be sensitive to required merit and characteristics of a counsellor before selecting a candidate.

For the purpose of this report the term teacher-counsellor will be used to refer to the position in Botswana schools. The teacher counsellor is first and foremost a subject matter teacher. She/he teaches in a subject area and then "fits counselling in". Very few teacher-counsellors are offered the opportunity for released time even though the Ministry has approved the concept. The problem was described by a Senior High School Headmaster as follows, "I would like to release the teacher from the class to do counselling but I have no one to take the position in the classroom". As a result

most teacher-counsellors must do their counselling after regular class hours for which they get no pay. As one teacher counsellor put it "I do it (counselling) because I love it". For many of the teacher-counsellors the lack of pay for the role of counsellor is troublesome but the lack of extra pay did not seem to deter them from occupying the position. Some of the teacher-counsellors are paid as department heads or senior teachers but this is not true for all. The lack of release time and pay may not be as severe a problem as the lack of training, but it is certainly a significant issue.

Nearly all of the teacher-counsellors in Botswana, are afforded no pre-service training in counselling. One Community Junior Secondary School teacher-counsellor, who had been working as a teacher-counsellor for nearly two years, stated, "I have had no training . I do not know what I am doing". She further indicated that she sees children with all types of social problems: child abuse, alcoholism, glue sniffing, pregnancy, boredom, realities of career opportunities which breeds pessimism. She doesn't have the skills to help them, so she must refer the problem to the social worker or the headmaster. She further stated, "I would like to be trained so that I could help the students". It is apparent that the above mentioned teacher-counsellor's plight is not atypical. One must remember that there is also a developmental role for the teacher-counsellor that should be considered.

The problems of teenage pregnancy among Botswana youth has been well documented in two reports: the NIR report on *Teenage Pregnancies in Botswana* and the Intersectional Committee on Family Life Education report on *The Profile of Youth in Botswana (1988)*. Both reports indicate that teenage pregnancy is a major social issue and one of the main reasons that young girls leave school, especially in rural areas.

The issue of teenage alcoholism has also been described in the 1988 report and study of *Alcoholism Use and Abuse in Botswana*. This study reports that there is a significant alcohol problem among the young. There are two other social issues that need to be mentioned here: boredom, especially in rural areas due to lack of recreational opportunities and much empty time; and pessimism about the future due to the significant lack of jobs and the high unemployment rate. Young people from 15 to 24 experience the highest unemployment rate of any cohort group (source: *PROFILE OF YOUTH IN BOTSWANA*).

The role for teacher-counsellors and the status of training in Botswana can be divided neatly into pre-service and in-service. First an overview of the current pre-service capability will be discussed. The University of Botswana currently offers two courses in Guidance and Counselling. There is an introductory course that is a survey course on guidance and counselling and an advanced course which is a continuation of the introductory course with the addition of counselling theories, skills practicing and role playing. There is currently discussion at the University of Botswana of adding additional course work in guidance and counselling.

MCE currently offers a course in Guidance and Counselling. It is a broad survey course which includes some skills development and role playing. MCE is considering the development of additional courses in guidance and counselling. Both UB and MCE's course work in counselling is taught by two expatriate contract employees whose contract will end within one year. The question is: who will fill this void? Currently there are two institutions of advanced study that offer limited course work in counselling. The teacher training colleges and the College of Education at Tonota offer no course work in counselling but have plans to offer guidance and counselling courses in their pre-service program. These institutions cannot launch a successful program due to the lack of qualified personnel to both design the curriculum and to do the instruction. This lack of qualified academic personnel is true at all levels of education. Currently there are few Botswana with advanced degrees in Guidance and Counselling; two are employed at the CD & E.

That there are only two professionals in the country with the qualifications to teach guidance counselling is definitely a concern. This does not necessarily mean that there are not others who can offer limited training in guidance and counselling but even that number is small.

There are many issues on developing a useful, comprehensive program of in-service training based on the needs of those in the field. The first issue focuses on the family of skills or clusters that are the basis for the model. One tends to be broad in identifying the groups of skills for teacher-counsellors. The following lists the typically accepted roles for full time counsellors. Under each role is a listing of functions that are usually associated with each role. Currently the pre-servicing training at UB and MCE gives cursory attention to these roles and functions. One must remember that pre-

ACTION PLAN

SEPTEMBER, 1990 - AUGUST, 1993

1. Accept Consultant's Report.
2. Reconstitute Reference Committee.
3. Develop training materials for basic and advanced core skills.
4. Gazette positions.
5. Institutionalize career ladder.
6. Develop job description for Regional Guidance Officers.
7. Select Regional Guidance Officers and provide necessary training.
8. Develop job description, select and train In-Service Guidance Officers.
9. In-Service Guidance Officers conduct workshops on Core Skills, both basic and advanced.
10. Develop job description, select and train career Information Officer (s).
11. Develop career information dissemination and retrieval network.
12. Evaluate scheme and refine.

IDENTIFICATION OF EMPLOYABILITY SKILLS COVERED DURING COURSE INSTRUCTION

DIRECTIONS: Following are skills that have been identified by employers and young entry level employees as essential for obtaining employment and for success in the job. Please check those skills that ALL students in your course have an opportunity to develop. Each skill should be considered in the context of having the opportunity to apply the skills in practical situation.

Please refer to the handout entitled "Identification of Employability Skills" for examples of each skill.

Title of Course _____
Name of Instructor _____
Date _____

A. JOB SEEKING - CAREER DEVELOPMENT SKILLS

- 1. Knows sources of information
2. Knows own abilities, aptitudes, interests
3. Knows occupational characteristics
4. Identifies career/occupational goals
5. Develops a career plan
6. Identifies and researches potential employers
7. Knows employment position(s) desired
8. Accurately completes:
a. Inquiry letter
b. Resume
c. Follow-up letter
9. Accurately completes job application
10. Handles interview without errors
11. Seeks information about future education/training

B. MATH SKILLS

- 1. Understands importance of math in jobs
2. Performs basic calculations (+, -, x, /)
3. Performs calculations in:
a. Fractions
b. Percentages
c. Proportions/Ratios
4. Makes reasonable estimates
5. Uses values from graphs, maps, tables
6. Uses English/metric measurement
7. Compares numerical values
8. Applies geometric principles
9. Uses formulas correctly
10. Constructs diagrams, tables, records
11. Uses elementary statistics
12. Uses instruments to solve problems:
a. Gauges, Meters, Scales
b. Calculators
c. Computers

C. COMPUTER SKILLS

- 1. Becomes aware of computer functions
2. Inputs and accesses data from computer
3. Has experience with computer programs
a. Business applications
b. Data management
c. Simple programming
d. Word processing
4. Understands issues associated with computer use

D. READING SKILLS

- 1. Understands the importance of reading in jobs
2. Develops vocabulary related to careers and occupations
3. Reads for details and special information
4. Interprets pictures, graphs, and symbols
5. Locates information in reference materials
6. Follows intent of written directions/instructions
7. Interprets ideas and concepts (comprehension)
8. Reads accurately at appropriate rate

E. WRITING SKILLS

- 1. Understands the importance of writing in jobs
2. Develops handwriting legibility
3. Composes formal letters
4. Fills out forms
5. Records messages
6. Writes memorandums
7. Composes ads/telegrams
8. Writes instructions and directions
9. Writes reports
10. Develops summaries
11. Takes notes and/or outlines
12. Corrects written materials

F. COMMUNICATION SKILLS

- 1. Reports accurately, concisely
2. Follows intent of oral directions/instructions
3. Speaks distinctly
4. Formulates questions
5. Answers questions accurately
6. Explains activities and ideas clearly
7. Uses appropriate vocabulary/grammar
8. Gives clear instructions and directions
9. Stays on topic
10. Uses non-verbal signs appropriately
11. Develops oral presentations
12. Presents information effectively to groups

G. INTERPERSONAL SKILLS

- 1. Functions cooperatively with fellow students
2. Functions cooperatively in team efforts
3. Functions cooperatively with adults outside school
4. Exhibits openness and flexibility
5. Seeks clarification of instructions
6. Exercises patience and tolerance
7. Utilizes suggestions about improving skills
8. Uses initiative in getting work done
9. Expresses opinions with tact
10. Demonstrates ability to negotiate differences with others

H. BUSINESS ECONOMIC SKILLS

- 1. Understands business organization
- 2. Understands business competition
- 3. Knows about processes of marketing
- 4. Knows about processes of production
- 5. Understands business costs
- 6. Understands factors affecting profits

I. PERSONAL ECONOMIC SKILLS

- 1. Knows how to evaluate products and services
- 2. Knows how to access community resources/services
- 3. Can compute working hours/wages
- 4. Knows how to handle financial affairs
- 5. Can handle records of income and expenses
- 6. Knows how to make price-quality comparisons
- 7. Knows how to prepare state/federal tax forms
- 8. Can evaluate insurance programs
- 9. Knows how to determine credit costs.
- 10. Understands legal rights in agreements
- 11. Maintains and utilizes various forms of transportation

J. MANUAL PERCEPTUAL SKILLS

- 1. Constructs/assembles materials
- 2. Uses specific hand tools and instruments
- 3. Develops visual presentations
- 4. Masters keyboard skills
- 5. Operates power equipment

K. WORK ACTIVITY SKILLS

- 1. Produces type/amount of work required
- 2. Maintains punctuality
- 3. Meets attendance requirements
- 4. Accepts assignments/responsibilities
- 5. Takes responsibility for own actions
- 6. Maintains consistent effort
- 7. Works independently
- 8. Manages time effectively
- 9. Respects rights and property of others
- 10. Adheres to policies and regulations
 - a. Health
 - b. Honesty
 - c. Safety
- 11. Presents a neat appearance
- 12. Keeps work area in good/safe condition
- 13. Exhibits interest in future career
- 14. Suggests or makes workplace improvements
- 15. Knows sources of continuing education
- 16. Knows about basic employee/student rights
- 17. Knows about basic employee/student responsibilities
- 18. Knows basic steps in getting a raise or promotion
- 19. Knows how to terminate employment

For the following section, evaluate in terms of projects that involve a full range of problem solving activities.

L. PROBLEM SOLVING/REASONING SKILLS

- 1. Recognizes problems that need solution
- 2. Identifies procedures
- 3. Obtains resources
- 4. Prepares or sets up materials/equipment
- 5. Collects information
- 6. Organizes information
- 7. Interprets information
- 8. Formulates alternative approaches
- 9. Selects efficient approaches
- 10. Reviews progress
- 11. Evaluates activities
- 12. Corrects errors
- 13. Makes conclusions
- 14. Summarizes and communicates results
- 15. Uses results to develop new ideas

M. OTHER

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____

Educational Structure in Botswana

		Primary Schooling	Junior Sec	Senior Sec	Post-Secondary	
Min of Ed		1-2-3-4-5-6-7	1-2-3	4-5-6-7	Community-Service	
			2	2	Junior Certificate	
					0 levels	
					1-2	A-levels
Dir of Per Durant						
University College of Botswana and Ministry of Education (Durant)					Pre-entry Science Course	General Education
				1-2-3-4	B Sc	
				1-2-3-4	Post Grad Cert/Education	
				1-2-3-4	BA/Humanities	
				1-2	Dip/Librarianship	
				1	Cert/Librarianship	
				1-2-3-4	BA or B Com/FESS	
				1-2-3	Dip/Statistics	
				1	Cert/Statistics	
				1-2-3-4	Dip/Accounting	
			1-2-3-4	Cert/Accounting		
			1-2-3-4	B Ed		
			1-2	Dip/Adult Ed		
			1-2-3	Dip/Sec Ed (through 1984)		
Teacher Training Colleges			1-2		Cert/Primary Ed	Tech Ed
			1-2-3		Dip/ Jr Sec (1984)	
Ministry of Health	Enrolled Nurse Schools		1-2		Enrolled Nurse (EN)	Medical Education
	National Health Institute			1-2-3-4	Registered Nurse (RN)	
				1-2-3-4-5	Nurse Anaesthetist	
				3-4	EN/Midwife	
			1-2		Lab Asst	
			1-2		Health Asst	
	Family Health Division			1-2-3		
					Psychiatric Nurse	
					Nurse Educator/Nutritionist	
					Dental Therapist	
					Family Welfare Educator	

continued

Ministry of Education	Min of Agric	Botswana Agricultural College	1-2	Cert/Ag, Animal Health, Community Development Dip/Ag, Animal Health.	Technical and Vocational Education
	Min of Works/Comm	Central Transport Dep.	1-2-3-4-5	Auto Mechanics, Plant Mechanics, Machinists	
	Roads Training Centre	1-2 (through 1982) 3	Roads Technician Cert		
	Botswana Polytechnic	1-2-3 (1984) 1-2-3 1-2-3 1-2-3 1-2-3 1-2-3 1-2-3	Craft Cert Advanced Craft Cert Technician Cert Full Technician Cert Ordinary Technician Dip (1982) Higher Technician Dip (1985) Secondary (Crafts) Teacher Training	Civil, Electrical, Mechanical and Telecommunications Engineering	
	Automotive Trades Trng Sch	1-2-3	Dip/Auto Mechanics, Auto Electrics, Plant Mechanics		
	Brigades	1-2-3-4-5-6-7	Trade Test C Trade Test B Trade Test A		
State President	Botswana Institute of Administration and Commerce	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000	Dip/Accountancy Cert/Accountancy Dip/Accountancy Higher Dip/Accountancy Elem Cert/Secretarial Intermed Cert/Secretarial Adv Cert/Secretarial Short-term Public Service Training	Commercial and Management Education	
		Institute of Development Management	Cert/Finance Management Cert/Health Care Administration Cert/Personnel Management Cert/Nursing Admin, Ed Admin Short-term Public Service Training		

- = Experience
- ▨ = Part-time
- ▤ = Sandwich Course

Manpower Planning Unit
Directorate of Personnel
- November 1981 -

Curriculum Development Unit Professional Staff

Below is a current listing of the professional staff within the CDU or associated divisions. If there are additions or corrections, contact Kent Noel, ext.261

Name	Area	Extension	Room
1. F. Leburu	Principal CDO	257	322
2. J. Chengeta	Agriculture	244	212
3. R. Ford	Social Studies	Study Leave	
4. L. Ives	Art	227	227
5. W. Leblanc	English	263	310
6. S. Makgothi	Science	265	306
7. M. Masisi	Social Studies	Study Leave	
8. C. Miles	Resource Centre	204	Resource Cntr
9. P. Moanukwena	Curriculum Specialist	263	310
10. V. Mogegeh	Mathematics	267	302
11. S. Mothei	Setswana	252	311
12. R. Nesbitt	English	262	312
13. K. Noel	Planning/Evaluation	261	314
14. T. Pelcowerse	Technical Studies	247	206
15. K. Ramahobo	(on study leave)		
16. D. Ratsatsi	Production Division	274	Product. Div.
17. N. Rarsoma	Setswana	251	309
18. P. Richard	Social Studies	266	304
19. J. Robb	Technical Studies	228	226
20. L. Scheffers	English	262	312
21. S. Shaw	Environmental Educa.	264	308
22. F. Walton	Technical Studies	247	206
23. B. Vogeli	Production Division	268	Product. Div.
Others include:			
C. Busang	Media	271	Product. Div.
Limakatso Charakupa	RTC	219	110
JSEIP Office		230	223
B. Kethusegile	Publications Unit	On Study Leave	
PRTO (Mrs. Khama)	RTC	238	112
Registrar (Mrs. Lecoge)	Exams	207	207
J. Maphorisa	PGCO	236	215
SBO (Mrs. Pilane)	Schools Broadcast		

revised 18 January, 1990

Project Resident Technical Advisors

Project Coordinator - Wes Snyder

Inservice Specialist (Teachers) (DSE) - Dick Mullaney

Inservice Specialist (Headmasters) (DSE) - Joe McDonald

Instructional Media Specialist (CDU) - Barry Vogel

Instructional Planning and Formative Evaluation Specialist (CDU) - Kent Noel

Instructional Systems Design Specialist (MCE) - Johnson Odharo

Testing and Measurement Research Specialist (RTC) - John Bowers

Art (MCE & CDU) - Laura Ives

English (CDU) - Wendy LeBlanc

Design and Technology (MCE & CDU) - Frank Walton

Social Studies (CDU) - Jack Lunstrum

JSEIP Commodities for the Curriculum Development Unit

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
10	Equipment	SDL black box	Surge compressor	1	187.84
17	Equipment	Apple Ext. Disk Drive	800K	1	510.00
19	Equipment	Access. Kit for Printer	for Imagewriter II	1	40.00
20	Equipment	Laser Printer	Laserwriter	1	7500.00
21	Equipment	Access. Kit for printer	Laserwriter kit	1	180.00
22	Consumables	Toner cartridge	for laser writer	2	246.00
23	Consumables	Diskettes 3.5"	400K	20	160.00
30	Furniture	Typing Table	Mobile, drop sides	4	352.00
31	Furniture	Light table, glass top	895 x 1195	1	342.51
32	Equipment	U-Bix Copier	Console Zoom w. ADF	1	10585.93
33	Equipment	2000 Sheet paper tray	Lt-5000	1	1660.15
34	Equipment	Auto Duplexing Unit	AD-5000	1	2246.09
35	Equipment	20 Bin Sorter	ST-5020A	1	2949.21
36	Equipment	Pedestal for Bin Sorter	ST-50208	1	2949.21
37	Equipment	Set B Auxilliary supply	for A2	1	82.03
38	Equipment	Key Lock	N.A.	1	48.82
39	Furniture	Drawing Board & Stand	1200 x 700	1	354.98
40	Furniture	Drawing Stool	MC 4451 adjustable	2	86.10
41	Furniture	Typist Chairs	H.9112	4	222.05
43	Consumables	Toner cartridge	for laser printer	1	123.00
44	Consumables	Toner cartridge	for laser printer	1	123.00
45	Consumables	Toner cartridge	for laser printer	1	123.00
46	Consumables	Toner cartridge	for laser printer	1	123.00
49	Equipment	Apple Macintosh	Plus	1	3246.00
50	Equipment	Apple Macintosh	Plus	1	3246.00
53	Equipment	Apple Ext. Disk Drive	800K	1	510.00
59	Equipment	Accessory Kit	Imagewriter	4	160.00
63	Equipment	Connector Kits	Apple Talk M2054	4	216.00
67	Equipment	Electric Stapler	Stago Salut 344	1	1554.05
68	Equipment	Rotary paper trimmer	616 mm cut, "A" sizes	1	159.16
69	Equipment	Blade-type trimmer	620 mm cut	1	511.57
71	Equipment	Tek computer	PC88	1	1729.09
74	Equipment	Dot Matrix printer	Citizen LSP-10	1	356.99
81	Consumables	Toner cartridge	M 0180	4	256.00
87	Equipment	Mac Plus keyboard	M 2519	1	85.00

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
91	Equipment	App Tik sys. conn. kit	M 2052	1	45.00
92	Equipment	App Tik sys conn kit	M 2052	1	45.00
93	Equipment	App Tik wiring kits	M 2033	1	390.00
94	Equipment	Laserwriter plus kit	M 0191	1	626.00
95	Equipment	Apple Macintosh computer	Plus	1	1249.00
96	Equipment	Apple Macintosh computer	Plus	1	1249.00
97	Equipment	Apple Macintosh computer	Plus	1	1249.00
98	Equipment	Apple Macintosh computer	Plus	1	1249.00
99	Equipment	Apple Macintosh computer	Plus	1	1249.00
100	Equipment	Apple Macintosh computer	Plus	1	1249.00
101	Equipment	Mac Plus Keyboard	M2519	1	0.00
102	Equipment	Mac Plus Keyboard	M 2519	1	0.00
103	Equipment	Mac Plus keyboard	M 2519	1	0.00
104	Equipment	Mac Plus keyboard	M 2519	1	0.00
106	Equipment	Mac Plus keyboard	M 2519	1	0.00
107	Equipment	Apple Ext. Disk Drive	800K	1	263.00
108	Equipment	Apple Ext. Disk Drive	800K	1	263.00
109	Equipment	Apple Ext. Disk Drive	800K	1	263.00
110	Equipment	Apple Ext. Disk Drive	800K	1	263.00
111	Equipment	Apple Ext. Disk Drive	800K	1	263.00
112	Equipment	Apple Ext. Disk Drive	800K	1	263.00
113	Equipment	Dot matrix printer	Imagewriter II	1	412.00
115	Equipment	Dot matrix printer	Imagewriter II	1	412.00
116	Equipment	Dot matrix printer	Imagewriter II	1	412.00
119	Equipment	Sheet feeder	A960332	1	137.00
120	Equipment	Sheet feeder	A960332	1	137.00
121	Equipment	Sheet feeder	A960332	1	137.00
122	Equipment	Apple Macintosh	Plus	1	2066.00
126	Equipment	Mac Plus Keyboard	M 2519	1	0.00
130	Equipment	Apple Ext. Disk Drive	800K	1	274.00
134	Equipment	Mac Hard Disk	20 BM SSCI	1	981.00
136	Equipment	Mac Hard Disk	20 BM SSCI	1	981.00
137	Equipment	Laserwriter printer	Plus	1	5062.00
138	Equipment	Connector kits	Apple Talk	4	216.00
139	Consumables	Toner cartridge	Laserwriter	6	777.00
141	Equipment	VHS portable recorder	JVC BR 6200 EG	1	1182.39
143	Equipment	VHS portable recorder	JVC BR 6200 EG	1	1182.39
144	Equipment	20" colour monitor	TM-20 PSN Multi-syst.	1	819.48

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
145	Equipment	20" colour monitor	TM-20 PSN Multi-syst.	1	819.48
147	Equipment	20" colour monitor	TM-20 PSN Multi-syst.	1	819.48
149	Equipment	Sound slide projector	Bell-Howell 830 AX	1	828.84
150	Equipment	80 slide tray	P/N 711648	4	65.52
151	Equipment	Storage cover	P/N 712075	1	14.98
152	Equipment	Carrying case	P/N 712076	1	112.38
153	Equipment	Film projector	Bell Howell 2675A	1	913.13
154	Consumables	Spare projection lamps	P/N 708065	2	39.34
155	Equipment	Video tripod	Slik easyglide 458	4	655.60
157	Equipment	Portable overhead proj.	Demolux D-6070	1	421.45
158	Equipment	VHS multi-recorder	Hitachi VT-168EM	1	611.88
159	Equipment	VHS camcorder	Hitachi VM-500E	1	1084.06
160	Equipment	VHS camcorder	Hitachi VM-500E	1	1084.06
161	Equipment	Tele conv. lens	Hitachi VK-CL20T	2	151.72
162	Equipment	Wide conv. lens	Hitachi VK-CL20W	2	151.72
163	Equipment	Battery packs - 2 hr.	Hitachi VM-UP22	4	155.47
164	Equipment	Carrying case	Hitachi VM-CB25	2	170.45
165	Equipment	Car battery cables	Hitachi VT-CC60	2	21.54
166	Consumables	Video tapes	Sony E-180 UHG	100	749.24
176	Furniture	School type plastic	7110-043	50	414.40
177	Furniture	swivel exc.	7110-004	5	1015.72
178	Furniture	typing swivel	7110-007	70	3070.78
179	Furniture	Filing 4 dwr. lockable	7110-009	78	6971.89
180	Furniture	1200 x 700 3 drawers	7110-054	34	3057.76
181	Furniture	1540 x 920 6 drawers	7110-056	71	9548.86
184	Furniture	Rectangular 8 seater	7110-065	3	310.80
185	Furniture	Rectangular 6 seater	7110-066	6	433.83
186	Furniture	Bookcase	1.8m h x .9m w x .3m d	43	5152.79
191	Equipment	Hard disk drive	Winchester	1	718.56
192	Equipment	Hard disk drive	Winchester	1	718.56
195	Equipment	220v. Conversion kit	Imagewriter II	2	29.94
196	Equipment	220v. Conversion kit	Mac Plus	1	164.67
200	Furniture	Conference chair	N.A.	28	1186.23
201	Furniture	Folding metal table	N.A.	1	57.72
202	Furniture	Drawing stools	N.A.	4	359.28
203	Furniture	Notice board	N.A.	66	1920.72
204	Equipment	Tea trolley	2 tier	4	323.35
205	Equipment	Tea trolley	3 tier	4	383.23

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
206	Equipment	Goods trolley	N.A.	1	50.90
207	Furniture	Work table	N.A.	14	1655.73
208	Equipment	PC Scan Plus	651-1	1	2195.60
209	Equipment	Publish Pac for Mac	6261A	1	523.60
210	Equipment	PC Scan Mac interface	7232	1	83.60
211	Furniture	Swivel desk chair	N.A.	80	5452.46
222	Equipment	Video camera kit	WV-KT100N	1	672.08
223	Equipment	Video camera kit	WV-KT100N	1	672.08
225	Equipment	Video camera head	WVP-F10N	1	672.08
226	Equipment	Video camera head	WVP-F10N	1	672.08
228	Equipment	Character Generator	WV-KB12N	1	100.44
230	Equipment	VTR extension cable	10 m	1	71.89
231	Equipment	Camera carrying case	WV-CC28	1	125.06
234	Furniture	SAR special	7110-006	51	1392.57
235	Furniture	Conference		15	1482.56
236	Equipment	Audio tape deck	Fostex X-30	1	1061.05
237	Equipment	Audio tape deck	Sony TC/W 230	1	580.81
238	Equipment	Audio amplifier	Yamaha AX-300	1	494.19
239	Equipment	Stereo speakers	Sony SSX-1A	2	261.63
240	Equipment	Micro language lab	Sanyo M259LL	1	784.88
242	Equipment	Hi speed printing sys	Xerox 9500	1	82556.81
243	Consumables	Emergency spares kit	for Xerox 9500	1	14725.00
244	Consumables	Misc. supplies	for Xerox 9500	1	2723.77
245	Equipment	Omni-directional mic.	D130	1	163.48
246	Equipment	Uni-directional mic.	D190	1	165.16
247	Equipment	220v conversion kit	Mac Plus	1	151.09
248	Equipment	220v conversion kit	Imagewriter II	2	54.94
249	Equipment	Apple Macintosh	Mac II HD40	1	4219.00
250	Equipment	Apple Macintosh	Mac II HD40	1	4219.00
251	Equipment	Apple Macintosh	Mac SE HD20	1	2749.00
252	Equipment	Apple Macintosh	Mac SE HD20	1	2749.00
253	Equipment	Computer case	Deluxe carrying case	2	178.00
254	Equipment	Mouse pad		7	63.00
255	Equipment	Monitor	Viking 24"	1	1615.00
256	Equipment	Monitor	Viking 24"	1	1615.00
257	Equipment	Monitor	Viking 19"	1	1075.00
258	Equipment	Video controller board	for Viking 24"	2	1440.00
259	Equipment	Mic stand with clip	MS-197	2	82.24

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
260	Equipment	Apple keyboard	Extended	1	180.00
261	Equipment	Apple keyboard	Extended	1	180.00
262	Equipment	Apple keyboard	Extended	1	180.00
263	Equipment	Apple keyboard	Extended	1	180.00
267	Equipment	Computer case	Deluxe carrying case	1	89.00
268	Equipment	Apple memory upgrade	One megabyte	4	2200.00
269	Equipment	Brother electronic	CE 650	1	754.42
270	Equipment	Brother electronic	CE 650	1	754.42
272	Equipment	Video controller board	Viking for Mac SE	1	720.00
273	Equipment	Hohner wire stitcher	Economy 15/25	1	6420.45
274	Furniture	Filing plan w/stand	5 drawer	1	719.50
275	Furniture	Carpet and padding	None	222 sq. m	3704.72
276	Furniture	Step stool	None	1	94.00
277	Furniture	Student w/arm desk	None	6	210.00
278	Furniture	Room divider	1500 x 1200 mm	2	420.00
279	Furniture	Magazine display	None	15	105.00
280	Furniture	Reception chair	Mini club	6	741.00
281	Furniture	Coffee 910 x 910 mm	Imbua	1	186.00
282	Furniture	Lounge 2 seater	7105-061	2	147.00
283	Furniture	Dining upholstered seat	7105-068	16	378.67
284	Furniture	Stationery 2dr lockable	7110-012	8	560.13
285	Furniture	SAR special	7110-006	45	1036.35
286	Furniture	Filing 4 drw. lockable	7110-009	10	731.42
287	Furniture	Bookcase	1.8m h x.9m w x .3m d	12	1731.36
288	Furniture	Bookcase	.9m h x.9m w x .3m d	8	568.40
289	Furniture	Bookcase index holder	None	50	145.78
290	Equipment	Weiser Lockset	E5480 DLB	1	66.25
291	Equipment	Highpoint Door closer	Automatic	1	71.55
292	Equipment	Power skirting socket	13M	4	81.62
293	Furniture	Castors	#27	8	74.05
294	Furniture	Speedlock frame		6	362.27
295	Equipment	Hoover vaccum	Aqua Plus 2000	1	279.14
296	Furniture	Matts	Nomad cushion plus	3	645.76
297	Furniture	Book divider		300	664.62
298	Furniture	Writing 910 x 610mm	7110-051	12	477.00
299	Furniture	Office 1530 x 910mm	7110-047	2	127.20
300	Furniture	Refuse plastic	7240-0073	2	28.62
301	Equipment	Apple Macintosh	SE	1	1765.00

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
302	Equipment	Apple Macintosh	SE	1	1765.00
303	Equipment	Apple Macintosh	SE	1	1765.00
305	Equipment	Apple Macintosh	SE	1	1765.00
306	Equipment	Apple Macintosh	IIcx	1	4380.00
307	Equipment	Apple Macintosh	IIcx	1	4380.00
309	Equipment	Apple monitor	2-page monochrome	1	1595.00
310	Equipment	Apple monitor	2-page monochrome	1	1595.00
311	Equipment	Video controller card	2-page monochrome	2	1140.00
314	Equipment	Hard disk	20SC	1	747.00
315	Equipment	Hard disk	20SC	1	747.00
318	Equipment	Mouse pads	Mouse PRO	8	64.00
319	Equipment	Apple disk drive	PC 5.25"	1	319.00
320	Equipment	MS-DOS board	Mac 286	1	1099.00
322	Equipment	CMS cartridge drive	SD 45 RM	1	1099.00
323	Equipment	Syquist cartridge	45mb	6	714.00
324	Furniture	Newspaper rack		1	260.00
325	Furniture	Audio Cassette Cabinet		1	148.40
326	Furniture	Notice board	Meranti frame	10	1867.03
327	Furniture	Notice board	Glass enclosure	3	1724.00
328	Equipment	PC drive card	Mac	1	105.00
329	Equipment	Wall Projection Screen	B	1	196.10
330	Equipment	OHP trolley	Universal	1	159.00
331	Furniture	Desk lamp	6907	1	30.74
332	Equipment	Electrolux Vacuum	350E	1	290.97
333	Furniture	Video trolley		1	105.20
334	Furniture	Vert. blinds & curtains	N.A.	1	6685.42
335	Equipment	TABS		1	2586.40

As of 31 July, 1990 the total cost of commodities purchased for the CDU is	\$317,963.21
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JSEIP Commodities for the Research and Testing Centre

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
9	Equipment	SDL black box	Surge suppressor	1	187.84
47	Equipment	Apple Macintosh	Plus	1	3246.00
48	Equipment	Apple Macintosh	Plus	1	3246.00
51	Equipment	Apple Ext. Disk Drive	800K	1	510.00
52	Equipment	Apple Ext. Disk Drive	800K	1	510.00
55	Equipment	Dot matrix printer	Imagewriter II	1	590.00
56	Equipment	Dot matrix printer	Imagewriter II	1	590.00
60	Equipment	Sheet feeder	N.A.	1	315.00
72	Equipment	Tek computer	PC88	1	1729.09
73	Equipment	Dot Matrix Printer	Citizen LSP-10	1	356.99
74	Equipment	Dot Matrix Printer	Citizen LSP-10	1	356.99
75	Equipment	Tek computer	PC88	1	1729.09
89	Equipment	Mac Plus periph. cables	M 0187	1	24.00
90	Equipment	Mac Plus periph. cables	M 0187	1	24.00
135	Equipment	Mac Hard Disk	20 BM SSCI	1	981.00
167	Consumables	Answer sheets	Opscan 2000	30,000	2073.17
168	Consumables	Tests	IEA	20,000	2304.87

As of 31 July. 1990 the total cost of commodities purchased for the RTC is \$18,774.04

JSEIP Commodities for the Secondary Department

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
76	Equipment	Tek computer	PC88	1	1919.21
80	Equipment	Printer cable	N.A	1	20.66
187	Equipment	Epson Printer	LQ 800	1	523.95
193	Equipment	Printer cable	N.A.	1	20.95

As of 31 July. 1990 the total cost of commodities purchased for the Secondary Dept. is **\$2,484.77**

JSEIP Commodities for the Planning Unit (MOE)

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
1	Equipment	Minolta Copier	EP 4502	1	4564.13
2	Equipment	Auto Document Feed	F 11/A11	1	1883.76
3	Equipment	Sorter - 10 stations	S10-11	1	1256.23
4	Equipment	Key lock for copier	N.A.	1	16.43
5	Equipment	Sperry Computer	IT	1	6979.74
8	Equipment	SDL black box	Surge suppressor	1	187.84
11	Consumables	Printer ribbons	Epson LQ-1500	2	42.26
12	Consumables	Diskettes	1.2 megabytes	20	146.75
13	Consumables	Diskettes	360K capacity	20	82.18
24	Consumables	Fan fold paper	A4, white	2 boxes	137.49
29	Equipment	Tape streamer unit	Sperry, 60 megabyte	1	1976.84
77	Equipment	Amber Monitor	EIZO 303 0AL-EU	1	336.60
78	Equipment	Hercules Graphic card	N.A.	1	677.92
79	Equipment	Dot matrix printer	Citizen LSP-10	1	428.13

As of 1 Feb. 1988 the total cost of commodities purchased for the Planning Unit is \$18,716.30

JSEIP Commodities for the Molepolole College of Education

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
15	Equipment	Apple Macintosh	512K	1	2300.00
16	Equipment	Apple Macintosh	512K	1	2300.00
18	Equipment	Apple Ext. Disk Drive	800K	1	510.00
42	Equipment	Dot matrix printer	Imagewriter II	1	590.00
54	Equipment	Apple Ext. Disk Drive	800K	1	510.00
57	Equipment	Dot matrix printer	Imagewriter II	1	590.00
58	Equipment	Dot matrix printer	Imagewriter II	1	590.00
61	Equipment	Sheet feeders	N.A.	1	315.00
62	Equipment	Sheet feeder	N.A.	1	315.00
66	Equipment	Brother Electronic	AX-20	1	438.08
82	Equipment	Disk kit	M 2516	1	250.00
83	Equipment	Disk kit	M 2516	1	250.00
84	Equipment	Logic Board Mac. Plus	M 2518	1	599.00
85	Equipment	Logic board Mac. Plus	M 2518	1	599.00
86	Equipment	Mac Plus Keyboard	M 2519	1	85.00
88	Equipment	Mac Plus keyboard	M 2519	1	85.00
105	Equipment	Mac Plus Keyboard	M 2519	1	0.00
114	Equipment	Dot matrix printer	Imagewriter II	1	412.00
117	Equipment	Sheet feeder	A960332	1	137.00
118	Equipment	Sheet feeder	A960332	1	137.00
123	Equipment	Apple Macintosh	Plus	1	2066.00
125	Equipment	Apple Macintosh	Plus	1	2066.00
127	Equipment	Mac Plus Keyboard	M 2519	1	0.00
129	Equipment	Mac Plus Keyboard	M 2519	1	0.00
131	Equipment	Apple Ext. Disk Drive	800K	1	274.00
133	Equipment	Apple Ext. Disk Drive	800K	1	274.00
140	Equipment	VHS portable recorder	JVC BR 6200 EG	1	1182.39
142	Equipment	VHS portable recorder	JVC BR 6200 EG	1	1182.39
146	Equipment	20" colour monitor	TM-20 PSN Multi-syst.	1	819.48
148	Equipment	20" colour monitor	TM-20 PSN Multi-syst.	1	819.48
156	Equipment	Video tripod	Slik easyglide 458	2	327.80
170	Equipment	NCS Sentry 4000-OMR	308000413	1	4350.00
171	Equipment	Misc.	N.A.	82	1918.36
172	Equipment	Misc.	None	4	142.97
173	Equipment	Misc.	N.A.	28	1219.03

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
174	Equipment	Misc.	None	5	209.19
175	Equipment	Misc.	N.A.	1	398.84
183	Equipment	Misc.	N.A.	10	3490.11
189	Equipment	Misc.	N.A.	5	592.50
197	Equipment	Misc.	N.A.	5	386.25
199	Equipment	Misc.	N.A.	7	150.17
220	Equipment	Video camera kit	WV-KT100N	1	672.08
221	Equipment	Video camera kit	WV-KT100N	1	672.08
224	Equipment	Video camera head	WVP-F10N	1	672.08
227	Equipment	Video camera head	WVP-F10N	1	672.08
229	Equipment	VTR extension cable	10 m	3	215.66
232	Equipment	Camera carrying case	WV-CC28	3	375.18

As of 31 July, 1990 the total cost of commodities purchased for the MCE is	\$36,160.20
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JSEIP Commodities for Project Administration

<u>Key#</u>	<u>Category</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Cost (\$)</u>
6	Equipment	Epson Printer	LQ 1500	1	2045.20
7	Equipment	Tractor Feed for Epson	LQ 1500	1	143.82
64	Equipment	Brother Electronic	CE 500	1	535.04
65	Equipment	Brother Electronic	AX-20	1	438.08
70	Equipment	Printer cables	N.A.	2	37.24
75	Equipment	Tek computer	PC88	1	1919.21
188	Equipment	Modem	WS400V1223	1	358.68
190	Equipment	Modem cord	Transient protected	1	86.82
194	Consumables	Printer ribbons	N.A.	6	61.07
212	Equipment	U-Bix Copier	220 Z	1	4813.66
213	Equipment	Auto document feeder	for 220 Z	1	1465.84
214	Equipment	Auto Duplexing Unit	for 220 Z	1	1465.84
215	Equipment	Large Capacity Tray	for 220 Z	1	1155.28
216	Equipment	20-Bin Sorter	for 220 Z	1	2285.71
217	Equipment	Machine Pedestal	for 220 Z	1	232.92
218	Equipment	Sorter Pedestal	for 220 Z	1	198.76
219	Equipment	Key Counter	for 220 Z	1	24.84
233	Equipment	Laser Printer	Laserwriter Plus	1	6523.95
241	Consumables	Tire for BD3246B	175x14 R500	1	56.01
264	Equipment	Apple computer	Macintosh SE	1	2199.00
265	Equipment	Apple computer	Macintosh SE	1	2199.00
266	Equipment	Apple computer	Macintosh SE	1	2199.00
271	Equipment	Vehicle emergency kit	None	2	565.28
304	Equipment	Apple Macintosh	SE	1	1765.00
308	Equipment	Apple Macintosh	IIcx	1	4380.00
312	Equipment	Apple monitor	12" monochrome	1	460.00
313	Equipment	Video controller card	1-Bit	1	240.00
316	Equipment	Dot matrix printer	Imagewriter II	1	555.00
317	Equipment	Sheet feeder	Imagewriter II	1	240.00
321	Equipment	CMS cartridge drive	SD 45 RM	1	1099.00

As of 29 Sept. 1989 the total cost of commodities purchased for the Project Admin is \$39,749.25

JSEIP Vehicles

<u>Key#</u>	<u>Item</u>	<u>Model</u>	<u>Qty</u>	<u>Location</u>	<u>Cost (\$)</u>
14	Land Rover BUP V8 110	Station Wagon, 5 speed	1	Secondary	17435.65
25	Land Rover BUP V8	Station Wagon 110	1	MCE	20774.29
26	Opel Rekord	Station Wagon	1	CDU	7718.75
27	Opel Rekord	Station Wagon	1	MCE	7718.75
28	Opel Rekord	Station Wagon	1	Secondary	7436.55
169	Toyota Cressida	Station Wagon GL	1	CDU	13160.36
182	Ford Husky	Leisure Bus	1	CDU	13059.52
198	Toyota Landcruiser	Station Wagon	1	CDU	27515.57

As of 31 July, 1990 the total cost of vehicles purchased for the Project is \$114,819.44

Commodity Budget and Expenditures Summary

A. EQUIPMENT AND FURNITURE

For Ministry of Education - \$430,000 (60% USAID 40% GOL)

USAID funded to July 1990

Curriculum Development Unit	\$147,540.38
Research and Testing Centre	\$18,774.04
Secondary Department	\$2,484.77
Planning Unit	\$18,716.30
Molepolole College of Education	<u>\$38,500.20</u>
	\$226,015.69

GOB funded to July 1990

CD & E Building	\$172,762.75
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Total	\$398,778.44
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For Project Administration - \$75,000.00 (100% USAID)

USAID funded to July 1990

JSEIP Offices	\$39,749.25
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Total	\$39,749.25
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For Education Centres - \$360,000 (60% USAID 40% GOL)

<i>USAID funded to Sept. 1989</i>	\$6,591.95
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<i>GOB funded to Sept. 1989</i>	\$56,049.28
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Total	\$62,641.23
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B. INSTRUCTIONAL MATERIALS

For CD & E, MOE and MCE - \$258,000.00 (100% USAID)

<i>USAID funded to Sept. 1989</i>	\$4,378.04
<i>FSU funded to May 1990</i>	\$115,387.48

Total	\$119,765.52
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C. VEHICLES

For Ministry of Education - \$374,000.00 (100% USAID)

USAID funded to July 1990

Curriculum Development Unit	\$61,454.20
Secondary Department	\$7,436.55
Planning Unit	\$17,435.65
Molepolole College of Education	\$28,493.04
Education Centres	\$27,100.00

Total	\$114,819.44
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**Summary of Junior Secondary Progress
for JSEIP Evaluation Team
(K. Noel, 28 August, 1990)**

Upon the arrival of the JSEIP project in 1985, the Curriculum Development Unit officers had already recognized various curriculum needs within their specific subject areas, especially given the introduction of the Nine Year Basic Education Programme in 1986. There was a need for syllabus revision to conform to the new programme and the need to develop new teacher and student materials based on the new syllabuses. While the need for curriculum change was required at the primary level as well as the junior secondary level, JSEIP's focus was primarily aimed at the junior secondary level only. To thoroughly understand the status of curriculum within each subject area in 1985, a case study approach to describing individual subject areas might be warranted. However, for the purposes of this discussion, the general 1985 status of each subject in practical terms can be summarized in the table below.

Subject Status of Junior Secondary Curriculum in 1985

Little or No Curriculum in 1985

- | | |
|----------------|--|
| Art | The art curriculum had not been formalized. That is, no syllabus or materials had been developed to be used in all schools throughout the country. |
| Social Studies | While a topic outline had been developed for social studies, no objectives had been developed upon which a curriculum could be based. Also, there was only one small book of case studies for teachers to use with the new curriculum and it had been found most dissatisfactory to social studies teachers. |

Decision to Revise Curriculum in 1985-86

- | | |
|--|---|
| English
Setswana
Agriculture
Design & Techn.
Mathematics | The decision was made to revise the syllabus to better address the needs of Batswana pupils. This also implied the need to ultimately develop completely new student and teacher materials. |
|--|---|

Curriculum had already been undergoing revision in 1985

- | | |
|---------|---|
| Science | Science had been undergoing a gradual revision prior to 1985. Interim steps had already been taken to provide student materials for the new junior secondary programme, primarily in the form of worksheets. Therefore, its strategy was to continue with the revision process, both in syllabus and materials. |
|---------|---|

At the outset of the JSEIP project, its role in the whole curriculum development process was to help all subject areas to address their perceived needs. The degree to which JSEIP advisors were involved in each subject area depended on both the curriculum need within subject areas and the demand for or willingness to accept help on the part of those charged with

curriculum responsibilities. While there was an awareness of how a systematic curriculum development process should work among some officers, there was far less awareness of how to implement curriculum development in a systematic fashion. Therefore, much of the support provided by JSEIP has been to increase the level of awareness and skills required for implementation of a systematic curriculum development effort. It also helped identify opportunities to make inroads for institutionalizing some of those design, development and evaluation processes. Thus, much RTA time and consultant work was devoted to conducting workshops across the country on curriculum development for most of the subject areas, guiding individual officers in their attempt to design and develop materials and to evaluate materials as they were being developed. Only now are the fruits of those development efforts being seen in terms of the processes being used by the various subject curriculum efforts. For example, all syllabuses with which JSEIP has been involved include objectives; continuous assessment is gradually being incorporated in the materials being developed; and attempts at formative evaluation of materials using experts and field testing are becoming part of the process. While these have not all been institutionalized, the groundwork has been laid and definite inroads have been made. By 1991, manuals and training materials on curriculum development for CDOs will have been developed for reference and training within the Curriculum Development Unit.

With the exception of syllabus development (in which the project was involved across subject areas), each subject's approach to the development of materials was based on its individual status. Therefore, a brief discussion of the syllabus development strategies is presented below followed by a description of materials development by subject area.

Syllabus Development

Early in the project, the great need for more staff within the CDU to help with the enormous curriculum development effort was recognized by the MOE and JSEIP. JSEIP proposed and provided support for the secondment of two teachers for each core subject area to help with this effort. These teachers with CDOs and SEOs for each subject area formed Materials Development Teams (MDTs). Prior to 1985, most of the subject syllabuses had been used primarily as teaching syllabuses; they contained few performance objectives on which systematic development of materials and testing could be based. Therefore, the CDU with the help of JSEIP advisors conducted workshops for all MDTs and subject panels to address the need for objectives in their syllabuses. This formed the basis for later syllabus development in each subject area within the CDU.

Agriculture

Syllabus. While agriculture had been taught and examined at the junior secondary level, the Nine Year Basic Education Programme directed that the subject be taught at the primary level as well. As an interim strategy, agriculture decided to develop an interim syllabus for junior secondary. This interim syllabus was designed to address the immediate needs created by collapsing a three year junior secondary programme into a two year programme while initiating an effort to develop a primary curriculum which would ultimately be linked to the junior secondary syllabus.

Materials. Agriculture had been dissatisfied with the junior secondary materials being used in the classroom. Therefore, officers decided to develop interim teacher's guides and some student support material which would address the lack of adequate materials. Two JSEIP RTAs and one short-term consultant helped in this effort. After that, agriculture turned its attention to developing primary curriculum materials. Agriculture will revisit the junior secondary curriculum when the primary curriculum has been adequately addressed.

Art

The development of the art curriculum is adequately addressed in another section of this paper. The tremendous progress in this area involved both long and short term advisors supported by the project.

Social Studies

Syllabus. Social Studies was in a state of turmoil in 1985 because, while it had been taught at the primary level, it was replacing the traditional teaching of separate subjects (geography and history) at the junior secondary level. Seemingly, overnight, teachers trained in either geography or history had been turned into "social studies teachers." During the early stages of this development effort, the JSEIP inservice advisor who had previously specialized in social studies development in Africa substantially helped reduce the anxiety among social studies teachers throughout Botswana by conducting, with the social studies panels, workshops for teachers. At those workshops teachers helped develop the syllabus content and prepared interim teachers guides which would help them teach their subject with the few teaching resources available. JSEIP advisors then worked with the social studies MDT and panel to refine that syllabus.

Materials. To more systematically address the crisis created by lack of materials for social studies teaching, a JSEIP short term advisor helped train and develop with the MDT a teacher's guide and teaching modules, recognizing that, in the long term, more formal classroom materials would be required. These materials were distributed and regional inservice workshops for teachers were held to help teachers use the new materials. At a later point, a long term RTA in social studies was brought in to help with the development of a teacher's guide, student text, and student activity book. These are currently in the process of being developed. These materials will be in place in 1991/92. Finally, because the teaching of social studies is so dependent on appropriate teaching methodologies, the CDU through JSEIP invited a short term consultant to develop with social studies educators throughout Botswana a teaching methods book. The first published draft of that book will be available in November, 1990 and is in great demand by teachers and teacher training colleges.

Innovations. Apart from the teaching methods book which is the first such book developed exclusively for Botswana, an innovative approach is being taken with the development of student materials. Recognition of the problems students have in comprehending English text, the student activity book is being developed to help students comprehend and practice the social studies concepts and skills being taught through the social studies materials.

English

Syllabus. English revised the existing syllabus to represent a more communicative approach to the teaching of English in the schools.

Materials. Based on the syllabus, new materials were developed for Forms 1 and 2 and are to be in place in 1991. Greater details of this enormous development effort are discussed in another section of this paper.

Innovations. The materials for English incorporated a communicative approach in the curriculum, not only trying to address the more practical skills required to function in English in Botswana but also trying to ensure that adequate oral practice through group work was part of the curriculum. English was the first subject area to try to incorporate a systematic method of formative evaluation in their materials development effort. It was also the first subject to try to incorporate continuous assessment as a contributor toward the JC examination. Because it was a pioneer in these and other approaches, it has been met with some problems, both in management and implementation. However, lessons learned from that experience have been useful in curriculum development efforts in other subject areas.

Setswana

Syllabus. The subject of Setswana was not originally in the scope of work for JSEIP but JSEIP support for development of its curriculum was required nevertheless, initially in syllabus development and later in curriculum development.

Material. Based on Setswana's revised syllabus, the first step was to provide for teachers a scheme of work suggesting how the various objectives could be taught during the two junior secondary programme. Based on the scheme of work, interim teacher guides were developed to help support teachers. Currently, student text books and teachers guides are being developed, based on the scheme of work and interim teacher guides. These should be in place in 1991/92.

Innovations. A primary innovation within Setswana was the development of objectives for the subject. This act gave teachers a far greater understanding of what should be taught. A second innovation was a decision to focus less on the teaching of grammatical structures in Setswana and to focus more on the building of communication skills and an understanding of Batswana culture.

Science

Syllabus. Science had anticipated the shift from the three year JC to the two year JC prior to 1985. They had already completed some revision to their syllabus and had developed student worksheets to address this shift.

Materials. Based on the feedback they received from teachers regarding the student worksheets, they have begun developing student texts and teachers guides which are to be completed in 1992/93. In addition to support from JSEIP RTAs, two short term consultants helped with the final revisions of the 1 - 9 year syllabus, designing the syllabus, and setting up methods

for formatively evaluating curriculum materials. Further discussion regarding the development of science materials is discussed in another section of this paper.

Mathematics

By the time JSEIP started, a great deal of development work toward addressing the shift from a three year JC to a two year JC had already occurred under the direction of the Secondary Department. Therefore, very little input from the JSEIP project was requested.

Design and Technology

Syllabus. At the outset of the project, a technical studies curriculum comprised of wood work, technical drawing, and some metal work was in place. However, the Secondary Education Officer responsible for curriculum development was interested in revising the curriculum to conform with the philosophy of curricula in other parts of the world which prepared students to use a variety of technology and skills to solve technological problems. In setting a basis for this new approach, the design and technology RTA at MCE helped develop a philosophy for design and technology in Botswana and to help pre-service and inservice teachers understand the approach and the teaching methodologies this approach required. Later, a long term consultant was brought in to help develop a syllabus based on the philosophy.

Material. Design and Technology is in the process of developing teacher and student materials (Learning Activity Packages) that are based on the syllabus. The Form 1 materials will be field tested in 1991 and the Form 2 materials will be field tested in 1992. In implementing this change, the hearts and minds of Field Education Officers and teachers have had to be won. While this was a formidable challenge, much progress has been made in this area.

Innovations. The approach taken in Design and Technology is a relatively new one in Africa although it has been used successfully in other parts of the world. It takes a skill based, problem-solving approach requiring multiple-activities occurring within the same classroom. It uses a modular approach in student materials with each module culminating in the practical application of skills to solving a problem and a test to assess student achievement of other knowledge taught during the module. It emphasizes a broader technical awareness geared toward the needs and environment of the students and the application of knowledge from a variety of other subject areas, especially mathematics and science. It aims to help students to respond more appropriately to the technological needs and developments of Botswana. Even in the early stages of development, the programme has attracted the attention of neighbouring countries who are interested in adapting this approach to their programmes. The development of this programme also provided the opportunity to involve the Field Education Officers as well as teachers at the early stages of development and also includes systematic plans for formatively evaluating the materials and incorporating continuous assessment in the final evaluation of students.

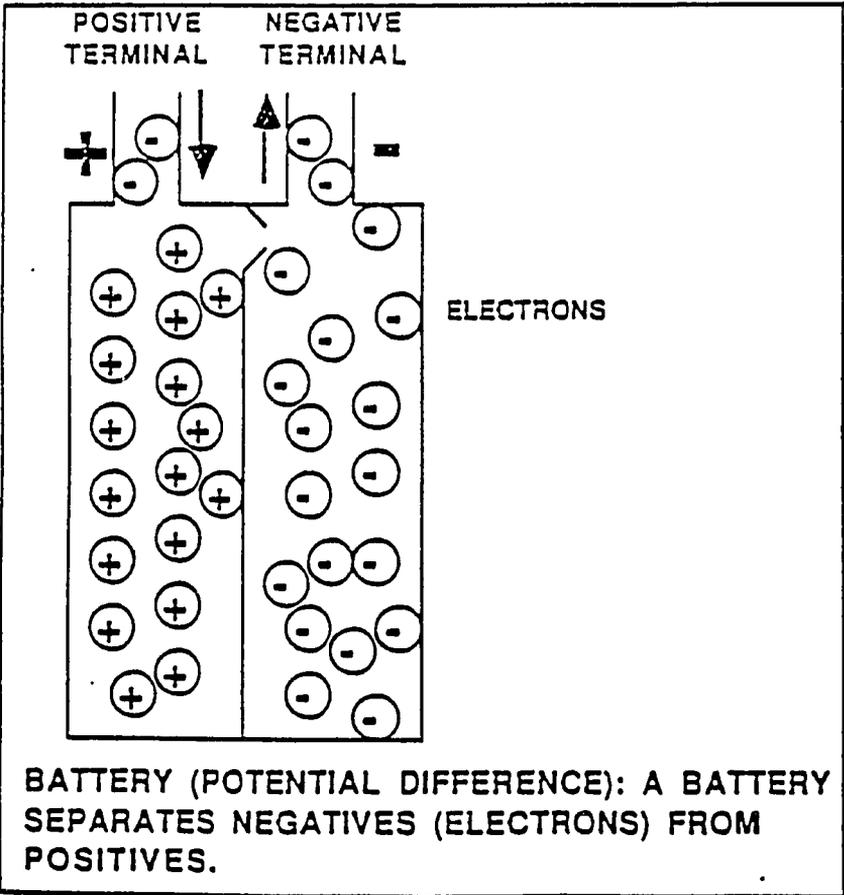
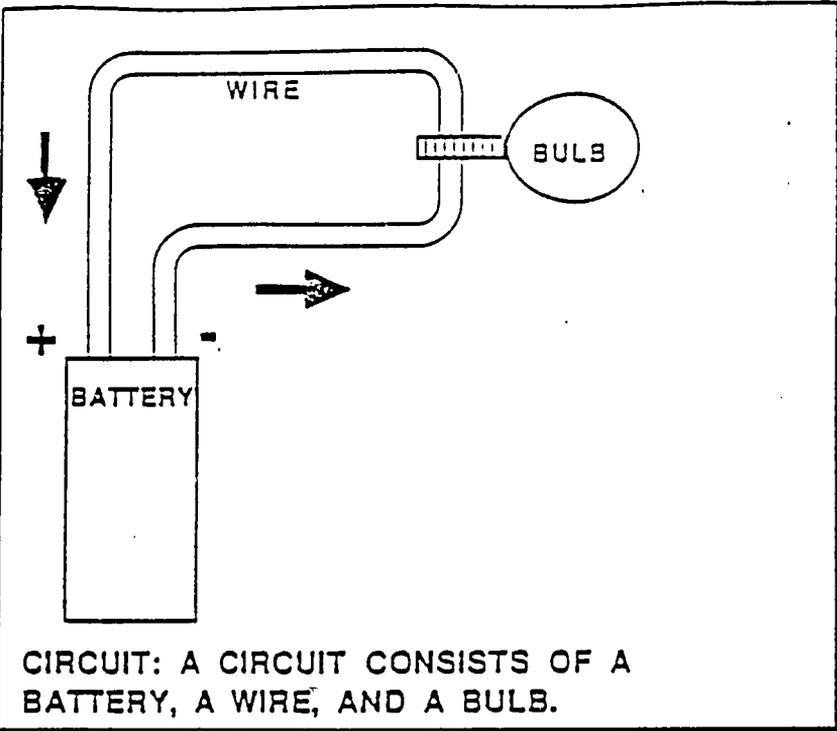


Fig. 5 Model for understanding Ohm's Law

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INTRODUCTION

The Molepolole College of Education offers a three-year programme of studies for a Diploma in Junior Secondary Education. The programme of studies consists of three components: two teaching subjects and educational foundation courses. Practicum experience is provided in two teaching practice opportunities. The teaching practice is seven weeks long, and offered in the first term of the second and third year.

AIM OF THE DEPARTMENT

The overall aim of the education curriculum is to provide the student with sound pedagogical principles for effective and efficient instruction. Learning is a personal and an intrinsic activity. Therefore to facilitate learning, it is imperative for the teacher to understand the student in totality, the process of learning and how to organise the learning environment to elicit the best response from the student. To achieve this, the curriculum offers a broad range of courses covering developmental and educational psychology, instructional design, curriculum design, evaluation techniques, administration, sociology, and philosophy of education. While the theoretical components of courses are intended to provide the student with a functional frame of reference, the practical components are designed to simulate teaching-learning conditions in the schools.

LEARNING RESOURCES

The school library is the main student learning resource centre. Current course textbooks and related learning materials are available in the library. As funds become available, the Education Foundation Department will have its own student learning resource centre. At present courses are supported by textbooks, teacher-made handouts and self-instructional modules.

COURSES OFFERED

Courses are offered in terms or quarterly sessions of 12-13 weeks. Each week consists of five periods of 55 minutes each. When two courses are offered in a term, periods will be allocated according to content demand. The content outline shown in this document represents only major topic areas. Elaboration of each course is reflected in specific course outlines.

SUMMARY OF COURSES

YEAR I

- Term One: Human Growth and Development
Theories of Learning and Teaching
- Term Two: Instructional Design and Evaluation of Learning
Micro-teaching/Peer teaching--1
- Term Three: Teaching Methods and Skills
Micro-teaching/Peer teaching--2

YEAR II

- Term One: Teacher Education
Initial Teaching Practice
- Term Two: Guidance and Counseling
Curriculum Design
- Term Three: Test Construction and Continuous Assessment

YEAR III

- Term One: Botswana Secondary School Administration
Final Teaching Practice
- Term Two: Sociology of Education
- Term Three: Philosophy of Education and Values
Final Examinations

Course Outlines

Year One, Term One

HUMAN GROWTH AND DEVELOPMENT

Human Growth and development is an introductory course on the various stages of physical, mental, psychological and social development from childhood to adulthood. The educational implications of each stage is examined in terms of the role of the teacher as an educator, a parent and a counsellor. Specific emphasis is placed on the adolescence years to help the teacher cope with the behavioural characteristics of this age group.

1. The nature of growth and development
2. Heredity and environment including ability ranges
3. The prenatal period, infancy and babyhood
4. Early childhood
5. Late childhood
6. Adolescence-physical, psychological and social characteristics
7. Adolescence-Needs
8. Adolescence-coping with behavioural problems
9. Maturity
10. Implications for the classroom teacher

THEORIES OF LEARNING AND TEACHING

The purpose of the course is to enable the student to comprehend the learning principles and instructional implications of four fundamental learning theories --- Behaviourist-associationist, cognitive-organisational, information-processing and social learning. Each theory is expounded in terms of its historical setting and the learning problems its proponent(s) were addressing. The empirical significance of the learning principles in each group of learning theory and their classroom application are emphasised.

1. Classification of learning theories
2. Behavioural learning theories-types, description, learning principles and teaching application
3. Cognitive learning theories-types, description, learning principles and teaching application
4. Social learning-types, description, learning principles and teaching application
5. Motivation and learning: motivating factors and how used to enhance learning
6. Designing a teaching-learning environment: an amalgamation of theories of learning.

Year One, Term Two

INSTRUCTIONAL DESIGN AND EVALUATION OF LEARNING

The general aim of the course is to enable the student to comprehend the principles of instructional design and how they are applied in designing teaching and learning activities. Specific experience is provided in preparing scheme of work, writing aims and and instructional objectives, writing lesson notes, preparing lesson plans, and in delivering, evaluating and revising a lesson.

1. Introduction to instructional design-sources of information/scheme of work
2. Writing aims and instructional objectives
3. Developing/selecting instructional materials and teaching aids
4. Specifying teaching methods, techniques and learning activities
5. Relating the events of instruction to lesson preparation
6. Preparing lesson notes and lesson plans
7. Delivering the lesson using the events of instruction
8. Assessing the lesson and instructional materials/methods
9. Providing feedback, remediation and enrichment
10. Revising the lesson and instructional materials/methods

MICROTEACHING/PEER TEACHING-1

Microteaching/peer teaching is concerned with providing the student with practical experience in delivering instruction. Since subject departments will be responsible for content-specific delivery methods and techniques the education department will focus on general teaching principles. Emphasis will be placed on presentation techniques pertaining to teacher behaviour. *Microteaching/Peer Teaching-1* provides practicum opportunity for the course on *Instructional Design*. Students will demonstrate the skills of lesson preparation, delivery, evaluation and revision processes.

Year One, Term Three

TEACHING METHODS AND SKILLS

Teaching Methods and Skills aims to introduce the student-teacher to concepts, methods and skills that are fundamental to effective teaching. The course reviews principles involved in arranging the teaching-learning environment, explains how to teach concepts, and discusses the expository, discovery and inquiry methods. It also covers basic questioning skills, conducting discussion groups and role play, utilizing guest speakers, planning field trips, establishing a marking system, formulating and enforcing classroom rules, and dealing with behavioural problems.

1. Teaching concepts, e.g., reinforcement
2. Arrangement of the teaching-learning environment
3. Expository and discovery methods
4. Inquiry and project methods
5. Assignment, classroom and homework
6. Questioning skills
7. Discussion, large & small groups
8. Role playing, guest speakers, and field trips
9. Enrichment and Remediation (dealing with fast and slow learners)

MICRO-TEACHING/PEER TEACHING-2

Microteaching/peer teaching-2 is a practicum opportunity for the course on *Teaching Methods and Skills*. Students will demonstrate the application of basic teaching and methods and skills in peer and actual teaching situation using junior secondary school pupils, when possible.

Year Two, Term One

TEACHER EDUCATION

1. Introduction to Teacher Education
2. The Teaching Profession and Academic Ethos: rights, responsibilities and expectations
3. The Role of the Teacher: classroom and extra-curricular activities
4. Authority, Order and Discipline in Schools
5. Management of the learning environment
6. The Teacher and the Community

INITIAL TEACHING PRACTICE

The initial teaching practice is a practicum opportunity for the student to experience classroom teaching. Each student will prepare, execute and evaluate lessons in their two major subject areas. In addition, the student will carry-out other teaching responsibilities assigned by the participating school or the college.

Year Two , Term Two

GUIDANCE AND COUNSELING

This overall intent of the course is to enable the student to understand the general principles of guidance and counseling and to apply them in helping pupils to successfully go through their education. Since educational success is not sufficient to produce a wholesome person, the course prepares the student to be aware of socio-economic traditions and expectations beyond the school walls which should be used as a base for successfully guiding the pupil towards self-realisation.

1. The field of guidance and counseling
2. The history of guidance and counseling in Botswana
3. The guidance and counseling program in Botswana's Junior Secondary Schools
4. Academic career guidance
5. The counseling techniques
6. Coordination with other professionals
7. Record keeping
8. Basic life skills
9. Ethics of guidance and counseling
10. Exercise in counseling skills

CURRICULUM DESIGN

This is a practical course designed to help students understand the curriculum for which they are being prepared to implement in the junior secondary schools. Broadly, the course is a joint effort between the Molepolole College of Education, the Secondary Education Department, the Inservice Unit and the Curriculum Development and Evaluation Department. This course introduces the student to the stages of curriculum design, implementation and evaluation. Specific emphasis is placed on the Nine Year Education Curriculum, its philosophy, subject-matter content and all of the auxiliary activities necessary for its planning, development, implementation and evaluation. A major outcome of the course is for the student to identify the strengths and weaknesses of the existing curriculum and make suggestions for improvement.

1. What is curriculum?
2. Structure of the curriculum-content of subjects and syllabuses including layout
3. Educational philosophies and the curriculum, a general consideration
4. Education for Kagisano: philosophical foundation of the community junior secondary schools
5. The Nine Year Education Curriculum-Aims and Objectives
6. Planning the curriculum
7. Planning the syllabus
8. Implementing the syllabus
9. Evaluating the curriculum
10. Practical exercise in curriculum implementation

Year Two, Term Three

TEST CONSTRUCTION AND CONTINUOUS ASSESSMENT

Test construction and continuous assessment is a basic course to help the student to design and use various types of achievement tests and assessment techniques to determine learning outcomes and to improve classroom instruction. The student is provided with practical experience in constructing different types test items including how to analyse and revise test items in keeping with the construct of reliability and validity. In addition, the student is provided with various strategies for assessing different types of learning capabilities and maintaining record of student progress as a part of continuous assessment.

1. Educational tests -uses and purposes
2. Criterion-referenced and Norm-referenced
3. Type of tests and uses: essay-extended & short-answer, objective, interpretive and performance (practical)
4. Preparing test specifications
5. Writing essay type tests & marking schemes
6. Writing objective type test items, -multiple-choice, matching, completion...
7. Writing interpretive type exercises-problem-solving...
8. The Junior Certificate Examination
9. Constructing and using item banks
10. Planning continuous assessment procedures
11. Marking, grading and keeping records of student performances
12. Analysing and interpreting test statistics

YEAR THREE. Term One

BOTSWANA SECONDARY SCHOOL ADMINISTRATION

This course has three major purposes: it helps the student to understand the major concepts and theories of effective organisation and administration and how they are applied in solving school management problems; it reviews the current organisation and administration of the Botswana educational system; and it helps the student to understand the roles and responsibilities of administrative personnel with specific focus on the dynamic relationship between school and the community in the administration and management of the school.

1. Introduction to educational administration and organization
2. Introduction to the theories of educational administration & organization
3. The structure and organisation of the Botswana educational system
4. The roles and responsibilities of secondary school administrators
5. Education Act and code of regulations, and UTS code of regulations

FINAL TEACHING PRACTICE (8 WEEKS)

This constitute the final evaluation of the student's readiness for teaching. Here the student is evaluated according to the general guidelines of the college. The decision of external moderators in conjunction with the college lecturers are combined to determine the student's final grade.

YEAR THREE, Term Two

SOCIOLOGY OF EDUCATION

This is an advanced course designed for final year students and attempts to prepare them for their work as teachers through the analysis of major trends, thought and problems in educational systems in different national and cultural settings. Particularly, the student should be able to identify and analyse major social factors/systems/issues and how they impact upon educational goals, planning and implementation; identify and analyse important issues debated by educational thinkers around the world, especially Africa and Botswana; and be able to comprehend the salient principles of sociology of education and how they facilitate solving of educational problems at macro and micro levels.

1. Introduction to sociology of education
2. Interaction between education and national goals
3. The concepts of equality of educational opportunity and equity
4. Educational planning-social considerations
5. Education for self-reliance and self-sufficiency
6. The allocation of scarce resources in Botswana society
7. Education and the society
8. Non-formal education
9. Teacher education
10. Education and Social Change

YEAR THREE, Term Three

PHILOSOPHY OF EDUCATION AND VALUES

The course focuses on the nature of philosophy, its styles and impact on education in general, and specifically on the curriculum, the community and the classroom teacher. As a short course, emphasis will be biased towards how major philosophical thoughts have influenced the course of education down the ages. Finally, the philosophical underpinning of the Botswana education system is examined both from historical and contemporary perspective.

1. Philosophy: meaning and uses
2. Selected educational philosophies
3. The reality of man
4. Philosophy and the teacher
5. Philosophy and the curriculum
6. Philosophy and the school as a community
7. The education of thinking and feeling
8. The dynamics of educational change

FINAL EXAMINATIONS (6 WEEKS)

The period of the final examinations are used for revision. Pre-examination briefings are organised for each of the subjects offered by the education department. Following the briefing, the students are allowed to review on their own and may seek assistance from individual lecturers are required.

Assessment

The education department assessment procedure is based on the assessment regulation of the college, which requires three grades during non-teaching practice term and one grade during teaching practice term. Within this framework, the education department grades are assigned as follows:

YEAR ONE (9 GRADES)

Terms One to Three

For each term, three assessment grades consisting of two supervised examination and one written assignment or project, or one supervised examination and two written assignments are given, for a total of 9 grades for the year.

YEAR TWO (7 GRADES)

Term One (Teaching Practice)

Due to teaching practice, One assessment grade based on written assignment or supervised examination is given.

Terms Two and Three

Three assessment grades are given for each term as described in Year One above.

YEAR THREE (6 GRADES)

Term One (Teaching Practice)

One assessment grade based on written assignment or supervised examination is given.

Term Two

Three assessment grades are given for each term as described in Year One above.

Term Three

Two assessment grades are given. The two grades are selected from three assessment grades consisting of two supervised tests and one written assignment. The lowest of the three grades is not recorded.

GRADE DISTRIBUTION

Final term grades must be reported in letter grades according to the regulation of the college as presented below.

A+	= 12;	A	= 11;	A-	= 10	Outstanding
B+	= 9;	B	= 8;	B-	= 7	Above Average
C+	= 6;	C	= 5;	C-	= 4	Average
D+	= 3;	D	= 2;	D-	= 1	Pass
E	= 0	Supplement				
F	= -3	Fail				

CONVERSION OF RAW SCORES

The following scoring system is suggested for all courses offered by the Education Department.

Numerical scores. All tests and assignments should be graded numerically.

Letter grades. To convert a numerical grade to a letter grade, each lecturer will decide on an appropriate sliding scale or interval ranges commensurate with the difficult level of the test, assignment and the course.

Single course offering. This means when ONE course is offered for a given class of students, e.g., Year One, Term One. For a single course, three letter grades are required. The three grades may comprise of TWO written tests and ONE assignment, or TWO assignments and ONE written test. If quizzes are used to comprise ONE letter grade, the average of the sum of the numerical values of the quizzes determines the grade.

Double course offering. This means when TWO courses are offered for a given class of students, e.g., Year One, Term One. Similar to a single course offering, three grades are required as described above. The lecturers involved should decide on how to share the grades. The process for arriving at the grade is also the same as in a single course offering. However, should one of the grades consist of two or more tests and/or assignments, the final grade is the average sum of the numerical values of the tests and/or assignments.

AIMS OF THE NINE YEAR PROGRAMME

On completion of the nine year school programme, students should:

- **Botswana Language and Culture**
Show knowledge and understanding of Tswana culture, language, literature, arts, crafts and traditions.
- **Botswana Political, Economic and Social Life**
Realize the effect of Botswana's location in the African continent on political, economic and social life in Botswana.
- **Botswana Climate and Ecology**
Appreciate climatic and ecological conditions prevalent in Botswana.
- **English Language**
Understand English and use it appropriately, both as a medium of learning at school and as a vehicle of communication beyond school.
- **Home and Financial Management**
Apply knowledge and imagination to identify problems in household management and everyday commercial transactions, and have the mastery of basic scientific and mathematical concepts to resolve them.
Know how to run a home and care for a family.
- **Self-sufficiency and Rural Development**
Acquire skills in food production and industrial arts for self-reliance, self-sufficiency and rural development.
- **Observation and Reasoning**
Be able to observe and record accurately and draw reasoned conclusions.
- **Basic Skills for Later Studies and Out-of-School Occupations**
Effectively use commonly needed tools and instruments in activities connected with later studies and out-of-school occupations.
- **Self-Assessment**
Be able to assess their own achievements and capabilities in pursuit of appropriate employment and/or further education.
- **Moral Development**
Have developed a sound moral code of behavior compatible with the ethics and traditions of Botswana.
- **Adaptability to Change**
Be able to adapt to social, economic and technical change by adjusting acquired knowledge to new situations and by taking appropriate action.

Art is an examinable subject that is offered in sixteen senior secondary schools and thirty-four junior secondary schools. Each year the programme expands as trained Art teachers graduate from the Molepolole College of Education (MCE). By 1991, fifty-three MCE Art Graduates will be teaching in the junior secondary schools. Presently at MCE, there are 80 students studying Art as a main subject and 20 students taking Art as an elective.

Junior Secondary Art Programme

The junior secondary art programme has a balanced practical and theoretic basis which can help meet the needs of Botswana's growing economic sector. Art education in Botswana is intended to strengthen the problem solving and critical thinking abilities of students, enhance their appreciation of the environment, improve the quality of their adult lives, and guide their interests and skills towards opportunities for advanced training, employment, and self-fulfilment. Public sector employers and entrepreneurs are being informed about the art education programme, are becoming aware of the skills it develops, and how they can help to shape it further. At the same time, students and teachers themselves are made aware of opportunities for art-related jobs and how the programme prepares junior secondary school leavers for further training or entry jobs.

This new curriculum and support material was introduced in 1989 and was trialled throughout the country. The materials are being evaluated and revised for publication for 1992. Characteristics of this curriculum are :

- o conformity to all Junior Secondary curriculum design.
- o emphasis on problem-solving situations.
- o directly linked with the Botswana's manpower needs.
- o utilisation of the local environment.
- o cost effectiveness.

Senior Secondary Art Programme

All Senior Secondary Art teachers are expatriates; there is no training programme for Art teachers at this level. Students who have studied Art for two years in the CJSS programmes are now able to have the opportunity to continue their studies in Art. In the future, these students will have the appropriate skills to continue on in Art-related training programmes and careers.

Primary Art Programme

At the four primary teaching training colleges, there are three qualified expatriate tutors and one unqualified Motswana Art tutor. The tutors are writing a uniform syllabus to be used in the TTCs. The Department of Curriculum Development and Evaluation (CD&E) is writing a working paper for developing a primary Art Design and Technology curriculum, and a committee with representatives from all appropriate areas of education will be formed to assist.

University of Botswana Art Programmes

At the University of Botswana, one Arts and Crafts course is offered to B. Ed. candidates. Although Art is offered at the primary, junior, and senior secondary levels, there is no programme at the UB to train teachers in this specialized area. Plans are underway for introducing the subject of art in the School of Education and the School of Humanities.

Junior Secondary Art Programme

Curriculum Design and Development

The design and the writing of materials for the Junior Secondary Art Programme has continued throughout this period. Modularized materials were developed for Form 1 and Form 2 students. Materials include the syllabus, teachers' guides, and visual aids. The plan was to develop one instructional unit for each term of each year. Career opportunities in art are featured as a strong component of this material. The final draft of the Junior Secondary Syllabus, Teachers' Guide, and Student Workbook will be published by Macmillan Botswana (PTY) LTD.

Form	Term 1	Term 2	Term 3
Form 1	Unit 1	Unit 2	Unit 3
Form 2	Unit 4	Unit 5	Unit 6

Junior Secondary Art Syllabus for Form 1 and for Form 2, Unit 1-5. The Art Syllabus was distributed for trialling in 1989. (Unit 6 will contain review material.)

Junior Secondary Art Teachers' Guide Books for Form 1 and for Form 2, Unit 1-5. The Teachers' Guide books were distributed for trialling in 1989. (Unit 6 will contain review material.)

Visual-Aid Packets for Form 1 and for Form 2, Unit 1-5. The visual-Aid Packets were distributed for trialling in 1989.

Curriculum Implementation and Field Testing (Formative Evaluation)

The implementation and formative evaluation of the new curriculum materials started with their introduction for the first term of the 1989 academic year. Prior inservice was carried out. There are now 34 secondary schools in Botswana offering art as an optional examinable subject with 5000 students studying the subject. Curriculum implementation and field testing occur concurrently.

The Junior Secondary Art Syllabus was Field tested for Form 1 and for Form 2, Unit 1-5.

The Teachers' Guide Books and Visual-Aid Packets were field tested for Form 1 and for Form 2, Unit 1-5.

Supplies/Equipment requisitions were organized for new schools offering art as an examinable optional subject. Arrangements were made with Boipelego to supply new community junior secondary schools who start art programmes with P10, 000 worth of art materials, with each school given an additional P16 a year for each junior secondary student who elects to study art. The HOD of the Art Department at MCE and the Department of Secondary Education worked together to recruit staff for art programmes in new schools.

A qualified art teacher was recruited as a field education officer for the 1989 Inservice Art Programme.

Inservice Art Workshops were conducted for secondary teachers. Art educators were used to discuss art content and methods, and local craftspeople were used to demonstrate their techniques, e.g. potter, wood carver, basket weaver, and wall decorator.

A data collection form was used to formatively evaluate the implementation and use of the new curriculum materials. The form was used for all units with items tailored for each unit.

The Art Materials Evaluation Forms were distributed to art teachers for Form 1 and for Form 2, Unit 1-5.

Curriculum Summative Evaluation (Student Certification)

This area focuses upon the Junior Certificate Examination in Art which, together with home economics, design technology, and religious education, is an examinable optional subject. All junior secondary students must sit for examinations in one optional and six core examinations. One-day JC Test Item Writing Workshops were conducted. JC Examination specifications were developed and items written accordingly.

The *Junior Certificate Art Examination* (multiple-choice Paper 1 and Portfolio) was developed. JC certification is based on theory (Paper 1) and practice (Portfolio) with 50 and 100 marks, respectively.

Marking arrangements for thousands of artworks were organized through the Exam Unit.

A marking sheet used for the JC practical coursework was developed at RTC/CDU.

The Junior Certificate Art Examination Report was developed at RTC/CDU.

Curriculum Dissemination

All Secondary Schools in Botswana that include art as a time-tabled subject were visited to review teaching materials and methods.

College and Secondary Art Exhibitions were organized and implemented at Molepolole College of Education.

The newsletter "Art Mo Botswana" was produced and was sent to all secondary schools and teacher training institutions in Botswana. It was distributed to art-related employers in the Botswana private sector, to Ministries of Education and Museums in SADCC countries, and to art education programmes in Europe, the United States, and Canada.

Molepolole College of Education: Teacher Training

Teacher Training Curriculum

The MCE Teacher Training Programme in Art is integrated with the content and learning objectives of the Junior Secondary Art Programme; the department trains MCE art student-teachers in the application of the Junior Secondary Art Programme Syllabus. Teacher preparation includes the supervised student teaching of small groups of students from the local CJSS in Molepolole and intensive supervision during seven weeks of teaching practice carried out for second year and third year MCE students.

The MCE Department of Art has four staff lecturers. MCE art student enrollment is 19 third year students (completing in 1990), 18 second year students (completing in 1991), 36 first year students (completing in 1992). First year intake for 1991 and thereafter at MCE is 40 students.

The Art Apprenticeship Programme was organized from MCE Department of Art, e.g. contacting companies, and matching students to companies.

The recruitment of an External Examiner was organized for the MCE Department of Art. College policy requires the external examination of each department's programme to certify its quality and the ways each evaluates student performance.

MCE Art Department planned and designed the Final Comprehension Examination Papers.

The MCE Art Programme Course Description (three year programme) was developed.

The MCE Art Teaching Laboratory was organized by the Department of Art. Children from local CJSSs in Molepolole participate each year in a teaching laboratory taught under staff supervision by first, second and third-year MCE student-teachers. This is preparation for student practice teaching. Each student-teacher teaches two double-periods (160 minutes) of laboratory teaching each year. Teaching performance is staff- and peer-critiqued.

Art-Related Employment Opportunities

Art Education and Art Employment Project, Phase I (AEEP)

This project was sponsored by USAID through JSEIP. Employers in the private and public sectors were interviewed to determine what types of art-related jobs now exist, how many of these jobs exist at various levels of employment, how employers find employees, how job-seekers find available employment, what sorts of non-formal or on-the-job training occurs, and what valid projections of art-related employment can be made. The needs and projections of art-related job opportunities will be integrated into the MCE Teacher Training Curriculum and into the Junior Secondary Art Programme.

MCE Art Apprenticeship Programme

This is a teacher training component sponsored by USAID through JSEIP. Student teachers were placed for three-weeks with private sector employers or with self-employed entrepreneurs for work experience in art- and craft-related experience between terms of study at MCE.

Curriculum and Materials Design and Development

The final draft of the Junior Secondary Syllabus, Teachers' Guide, and Student Workbook will be published by Macmillan Botswana (PTY) LTD.

Junior Secondary Art Syllabus revision written will be for Units 1-3.

Teachers' Guide Book revision will be written to cover Units 1-3.

The plan and design for the format of the JC Student Workbook will be completed.

Co-produce a prospectus paper for the new primary Art Design Technology curriculum.

Conduct Art Curriculum Workshops for art teachers.

Curriculum Summative Evaluation (Student JCE Certification)

Prepare 1991 Junior Certificate Examination in Art based on criterion reference testing (CRT).

Continue as Chief Examiner for the MOE Examinations Unit and supervise marking.

Conduct JC test item writing workshops to prepare the 1991 Art JCE.

Prepare the report evaluation of the 1990 Junior Certificate Art Examination results.

Art-Related Education, Employment Opportunity and Job Generation

Art Education and Art Employment Survey Project Phase I completed.

Continue MCE Art Apprenticeship Programme implementation and evaluation.

Continue coordinating career planning possibilities with Ms Maphorisa in RTC.

Review and make revisions to the Junior Secondary Art Curriculum in light of data.

Future Developments

Junior Secondary Art Programme

- Complete Junior Secondary Art Syllabus, Units 3-6.
 - Complete Junior Secondary Art Teachers' Guide Book, Units 3-6.
 - Complete Junior Secondary Art Student Workbook.
 - Complete the Molepolole College of Education Art Syllabus and Course Descriptions.
 - Design and implement an Inservice Programme junior secondary art teachers.
 - Design and implement a Staff Development Programme at Molepolole College of Education.
 - Design and implement the decentralization of the JCE based on CRT.
-

Primary Art Programme

- Design and write primary art curriculum material.
 - Design and implement a Staff Development Programme for the primary teacher training colleges.
 - Design and implement an Inservice Programme primary teachers.
-

Senior Secondary Art Programme

- Develop plans to design a senior secondary art curriculum including a certification examination.
 - Design and implement an Inservice Programme for senior secondary art teachers.
-

University of Botswana art programmes

- In the School of Education, develop a programme to train art teachers for senior secondary school, and primary and secondary teacher training colleges.
 - In the School of Humanities, develop a programme to train Batswana in the fine and applied arts.
-

Art Related Employment Opportunities

- Expand the Art Apprenticeship Programme.
 - Begin plans for Phase II of the Art Employment and Education Project.
-

Localisation

At this stage, pre-service, inservice, and overseas training in all areas is a necessity. All key posts are either vacant or held by expatriates who will have to be replaced. Batswana teachers were placed in the schools for the first time in January 1989. There is a great need to provide regular supervision and guidance. There is an immediate need to begin training senior secondary school teachers and art tutors for the teacher training colleges.

There is a need for people to be trained for the following posts.

130	Junior Secondary teachers
50	Senior Secondary teachers
5	Molepolole College of Educations lecturers
8	Teacher Training College tutors
4	Field Education Officers - Secondary
4	University of Botswana lecturers
2	Senior Education Officers - Secondary
6	Teacher Advisors - Primary
2	Curriculum Development Officers
4	Field Officers - Primary

MOLEPOLOLE COLLEGE OF EDUCATION
EDUCATION DEPARTMENT

INSTRUCTIONAL DESIGN

PREFACE

This course was first offered in the Molepolole College of Education, Second Term of 1987 to the first year students¹. At that time each module was designed two weeks before it was implemented. This was because very little was known about the characteristics of the students, that is, their reading and comprehension level in English Language, their interest and motivation, and how they learn. Throughout the course, a large body of information was collected to revise the modules. The instruments used were weekly tests, attitude questionnaires, individual, small and large group discussions conducted after each module was implemented.

Based on the knowledge and experience from the course, the modules were revised and sent to the Government Printer in October 1987. Thus the current modules may be called the *First Edition* and as such, things that require further revision or should be changed you may still be found. It is hoped that during the second implementation of the course (third term of 1988 and 1989), revisions will be made to further improve the modules.

Acknowledgements

It is difficult to mention everyone who had helped in various ways to make the production of the modules possible. However, a few names are worth mentioning. The production of the modules could not have been possible without the support of the Junior Secondary School Improvement Project² (JSEIP) which was solely responsible for all costs. Although more revision is required, the current standard of the modules was made possible by the suggestions of the students who took the course. Throughout the development of the course, suggestions and contributions were received from lecturers of the Education Department of the college and from curriculum designers of the Ministry of Education. Without all of the contributions mentioned above, it would have been impossible to teach the course through the modular approach.

¹ First year students at the Molepolole College of Education have either the Junior Certificate Examination (following successful completion of junior secondary education) or the Cambridge Overseas School Certificate (following successful completion of senior secondary education). Age and post-secondary work experience varies widely.

² JSEIP is a project sponsored by the United States Agency for International Development to improve the effectiveness and efficiency of junior secondary education in Botswana. The project is focussed on teacher training (Molepolole College of Education), curriculum and instructional materials development (Curriculum Development and Evaluation Department) inservice education (Secondary Department) and management information system of the Ministry of Education.

COURSE DESCRIPTION

What is a learning module?

A learning module is a self-contained instruction based on a major topic area(s), and consists of information, exercises and tests. There are two basic types of learning modules: self-instructional and teacher-guided. A self-instructional module is designed to be used by the student without any assistance. In this regard the module must contain all of the information, exercises, tests and feedback required by the student. A teacher-guided instructional module is designed for use by students and teachers. It may contain all or some of the information, exercises, tests and feedback required by the student, and in addition, specific instruction is given to the teacher on how to use the modules.

For example, the teacher may be asked to supplement or modify some of the information in the module as the learning environment may demand; the teacher may be asked to modify the exercises or prepare new ones; or the teacher may be asked to use the module as a supportive text in a course of the same or related content.

This course is designed as a teacher-guided instructional module. This mode was considered appropriate since the materials have a broad application to the area of teaching process. Instructional design, as you would learn from Unit One, is a specific way of thinking about how to plan, implement, evaluate and revise instruction (lesson). The techniques and procedures suggested can be applied to any subject. In future, lecturers at the college may choose to use all or some parts of the module. In fact, this is expected since adaptation of knowledge and processes are necessary to meet the needs of a progressive society.

Aim of the Course

The general aim of the course is to enable you to comprehend the principles of instructional design and how they are applied in designing teaching and learning activities. When you have completed this course, you should be able to:

1. State the meaning and purpose of Instructional Design and describe its importance for designing learning and teaching activities.
2. Demonstrate knowledge of Instructional Design techniques involved in planning, implementing, evaluating and revising instruction.
3. Apply knowledge of basic Instructional Design skills in designing a single concept instruction, that is, a simple topic that can be taught successfully within 20-30 minutes.

COURSE STRUCTURE

The course is structured in weekly units of instruction. Altogether, there are 10 weekly units. Following are the elements of each weekly unit module.

1. **Title.** This is the content area of what you will be learning.
2. **Aim.** It is a general statement of what you will be learning.
3. **Content Outline.** This is simply a list of things you will be learning in the unit.
4. **Objectives.** These are precise statements of the knowledge, skills and attitudes which you should possess after completing each unit.
5. **Introduction.** The purposes of the introduction is to stimulate your interest and provide you with background information that will help you to understand the information to be presented. This will be done in a number of ways such as a short story, analogy, overview of the unit content, or a series of stimulating questions to be answered by the end of the unit.
6. **Presentation.** Here you will be given a step by step guide to enable you learn the materials in the most effective and efficient way possible. Concepts, ideas, and information will be discussed with concrete examples. Learning resources such as instructional materials or other educational experiences (reading references, handouts, films, classroom setting, field trips, etc..) will be used when applicable.
7. **Practice/Exercise.** These are the activities you will be doing to enable you understand how the concepts, ideas and information are applied. A wide range of practical exercises using a variety of methods and techniques such as lectures, tutorials, assignments, group discussions, demonstrations, and individual reports will be used.
8. **Feedback.** This is the information provided to let you know how well you have done in an exercise. Feedback will be provided in the module as model answers to questions and in class in the form of oral discussions.
9. **Remediation.** It is the extra help that you will receive if you did not understand the content or pass the test in the unit. This could be done through tutorials or group activities in the classroom.
10. **Enrichment.** This is extra reading references, exercises or other educational experiences that will help you to learning more about the topics discussed in the module.
11. **Evaluation** is a way of finding out how well you have understood the concepts, ideas and information in the unit. This will be done through weekly quizzes. You will be asked to fill out an attitude questionnaire at given intervals to determine how well you liked the learning materials and how they were organised and presented.

12. **References.** At the end of every unit, you will be given a list of reading references to help you learn more about the topics discussed in the unit. Note that there will be two major references: *The systematic design of instruction*, Dick and Carey (one copy per two students) and *Principles and practice of education*, Farrant (one copy per student).

TERM GRADES

The college requires you to have three course grades by the end of the term. These grades will be determined as follows:

1. **Quizzes.** You will be tested at the end of each or every other unit. Since there are 10 units, your average grade for the 5 or 10 tests will constitute one course grade.
2. **Product Grade.** By the end of the term, you will be required to turn in one product for grading. Your grade for the product will constitute the second course grade. The details of the product will be explained by the teacher.
3. **Final Examination.** The final examination will be comprehensive covering materials from all 10 units. It will consist of 100 items mostly multiple-choice and some short answer questions. Your score will constitute the third course grade.

Grading Form

You will be given a 13 step letter grade as follows:

A + = 12;	A = 11;	A- = 10;
B + = 9;	B = 8;	B- = 7;
C + = 6;	C = 5;	C- = 4;
D + = 3;	D = 2;	D- = 1;
E = 0	F = -3.	

Your final grade is the average of the three grades. Note that if you have an "F" in any one of the examinations or in the product, it will seriously affect your average grade because it is -3.

Learning Groups

You will be required to form a study group of about 6-8 people. This is important because you will be asked to do most of the exercises in groups.

TIPS TO THE STUDENT

Each unit module will be given to you, along with revision questions, a week in advance to enable you to prepare for class discussion and exercises. You should allow yourself time to thoroughly read the materials. The language used in the module has been simplified as much as possible. However, you may still require a standard dictionary for references. The following tips should be helpful:

1. Read the content by yourself and write down questions on concepts, ideas or information you do not understand or are not clearly explained.
2. Do the exercises yourself or in groups as directed.
3. Without reference to the module, answer the revision questions at the end of each unit.
4. Meet with your group session and compare your answers with those of the members of your group. Note down the questions and answers in which you have disagreement and bring them for class discussion. Although the multiple-choice questions will be constructed to have one best answer, there are will be some items which may have more than one correct answer, all equally best answers or not have good answers. In the event of such an occurrence, note the item and present it for class discussion and clarification.

SUMMARY OF TOPICS

- Unit One:** Introduction to Instructional Design
- Unit Two:** Levels of Instructional Design Activities
- Unit Three:** Writing Aims and Instructional Objectives
- Unit Four:** Developing/selecting/instructional materials and teaching aids
- Unit Five:** Specifying teaching methods, techniques and learning activities
- Unit Six:** Relating the "Events of Instruction" to lesson preparation
- Unit Seven:** Planning and delivering the lesson
- Unit Eight:** Assessing the Lesson and Instructional Materials/Methods
- Unit Nine:** Providing Feedback, Remediation and Enrichment
- Unit Ten:** Revising the Lesson and instructional materials/methods

UNIT ONE: Introduction to Instructional Design

I. Aim

To define the term "Instructional Design" and identify sources of information for instructional design activities.

II. Content Outline

A. The meaning of Instructional Design

B. Sources of Information for Instructional Design

1. Syllabus--the Junior Certificate Examination syllabus
2. Reference materials--library, textbooks, audio/visual aids.
3. Students--their ability, experience interests and home environment
4. Current Events--newspapers and government reports
5. Constraints--existing conditions that modify instructional activities

UNIT TWO: Levels of Instructional Design Activities

A. The ministry level-curriculum and materials development

B. The school level-scheme of work and lesson implementation

Stages of instructional design activities at the lesson level

1. Determining student characteristics and entry behaviour
2. Writing aims and instructional objectives
3. Developing/selecting/instructional materials and teaching aids
4. Specifying teaching methods, techniques and learning activities
5. Relating the "Events of Instruction" to lesson preparation
6. Planning and delivering the lesson
7. Assessing the lesson and instructional materials/methods
8. Providing feedback, remediation and enrichment
9. Revising the Lesson and instructional materials/methods

UNIT THREE: Writing Aims and Instructional Objectives

I. Aim

To write instructional aims and objectives taking into consideration content area, materials and resources, student characteristics and entry behaviours

II. Content Outline

A. Identifying Content Area

B. Matching Content with learner characteristics and entry behaviours

C. Identifying materials and resources

D. Writing aims

E. Writing objectives

UNIT FOUR: Developing/selecting/instructional materials and teaching aids

I. Aim

To identify instructional materials, aids and improvement strategies for their use.

II. Content Outline

A. Instructional Materials

1. Standard available materials from recommended sources
2. Identifies or improvised materials developed by the teacher

B. Teaching aids

1. Select standard available teaching Aids recommended resources
2. Improvised Teaching Aids developed by the teacher

UNIT FIVE: Specifying teaching methods, techniques and learning activities

I. Aim

To select teaching methods, techniques and learning activities for implementing a lesson.

II. Content Outline

A. Selecting teaching methods and techniques

1. Definition and types of teaching methods and techniques
2. Establishing Criteria for selecting teaching methods and techniques
3. Selecting teaching methods and techniques

B. Selecting learning activities

1. Definition and types of learning activities
2. Establishing criteria for selecting learning activities
3. Selecting learning activities

UNIT SIX: Relating the "Events of Instruction" to lesson preparation

I. Aim

To understand a chronology of events that occur in a lesson and how they are used in implementing a lesson.

II. Content Outline

The Events of Instruction

- A. Gaining attention
- B. Informing the learner of the objectives
- C. Recalling of previous learning and related experience
- D. Presenting the stimulus materials
- E. Providing learning guidance
- F. Eliciting performance
- G. Providing feedback
- H. Assessing performance
- I. Providing for retention and transfer of learning

UNIT SEVEN: Planning and delivering the lesson

I. Aim

To prepare consistent lesson notes and lesson plans for instruction.

II. Content Outline

- A. Preparing lesson notes
 - 1. Purposes of lesson notes
 - 2. Components of lesson notes
 - 3. Writing lesson notes
 - 4. Examples of lesson notes
- B. Preparing Lesson Plans
 - 1. Purposes of lesson plans
 - 2. Formats for lesson plans
 - 3. Writing a lesson plan
 - 4. Examples of lesson plan format

UNIT EIGHT: Assessing the Lesson and Instructional Materials/Methods

I. Aim

To develop strategies for evaluating a lesson.

II. Content Outline

- A. Principles of Evaluation
 - 1. Criterion-Referenced Evaluation
 - 2. Norm Referenced Evaluation
- B. Formal Techniques of Evaluation and Assessment
 - 1. Written tests
 - 2. Oral tests
 - 3. Attitude questionnaires
 - 4. Observation-Obtrusive

- C. Informal Techniques of Evaluation and Assessment
 - 1. Feedback: one-to-one, small groups and class discussion
 - 2. Review of students records, assignments/product
 - 3. Observation-unobtrusive
- D. Developing Objective Test Items
 - 1. Forms of test items
 - 2. Matching test items with objectives and learning content

UNIT NINE: Providing Feedback, Remediation and Enrichment

I. Aim

To provide feedback, remediation and enrichment after delivering the lesson.

II. Content Outline

- A. Feedback
 - 1. Oral feedback
 - 2. Written feedback
- B. Remediation
 - 1. Tutorial sessions
 - 2. Alternative learning activities
- C. Enrichment and Supplementary Learning Activities

UNIT TEN: Revising the Lesson and instructional materials/methods

I. Aim

To revise the lesson including instructional materials and processes

II. Content Outline

- A. Sources of Information for Revision
 - 1. Test results
 - 2. Teacher's Perspective
 - 3. Students' Perspective
 - 4. Outside Evaluation
- B. Revising instructional materials
 - 1. Content
 - 2. Instructional Processes
 - 3. Evaluation and Assessment

DEPARTMENT OF DESIGN & TECHNOLOGY Molepoloie College of Education

Background

The Ministry of Education (MOE) established Molepoloie College of Education (MCE) to prepare teachers for the Community Junior Secondary Schools (CJSSs). The opening of MCE in 1985 coincided with the significant expansion of the secondary education program. This expansion was concerned with the providing of a universal nine year basic education to the youth of the nation. As of January 1985, there were four teacher training colleges preparing teachers for the primary schools, the first seven years of the basic education program. With the establishment of the continuously increasing numbers CJSSs (2 years post primary), the establishment of MCE became necessary, as the University of Botswana (UB) could not meet the demand for secondary school teachers.

One of the contributions of the United States Agency for International Development (USAID) funded Junior Secondary Education Improvement Project (JSEI Project) has been a Resident Technical Advisor / Technical Studies (RTA/TS). The RTA/TS, in the person of Dr. Frank Walton, arrived in January 1986 and began the process of establishing a department, at MCE, (a) to prepare teachers capable of teaching Technical Studies at the Community Junior Secondary School (CJSS) level, and (b) to facilitate the production of teaching aids as needed by lecturers and students at the college.

When the college opened in February 1985, the teaching subject offerings were limited to Setswana, English, Mathematics, Science, Home Economics, and Social Studies. The programs offered at the college were constrained by the availability of staff. The pattern of staffing needs at MCE, was also reflected in the CJSSs, there was therefore some urgency for the establishment of the department of Technical Studies. The RTA/TS spent the first two months assisting in the Education department at the college, and developing some background into how Technical Studies was defined in Botswana, what was the extent of its offerings at the different levels of the educational continuum, what factors impacted upon the establishment of a department at the college, what were the needs in Botswana with respect to Technical Studies, and what problems could be anticipated.

The following were considered important issues to take into consideration in addressing the task at hand:

1. With the exception of the Auto Trades Training School and the Brigades, most of Technical Education was in the British mould, and under the supervision of British personnel.
2. The programs at the senior secondary schools, with one exception, was limited to woodwork and technical drawing. These were done as single subject, skill oriented programs, and were taken as single subjects at the Cambridge Overseas Examinations. Invariably, students did only one of these subjects.

both programs were headed by the same individual, a decision was made to combine operations. The large classroom became known as the Craft Room and the TAP building as the Technology Lab. These facilities were equipped in such a way that both programs could share them according to the nature of the activity. Because of increased enrollments, the department has outgrown the present facilities and are anxiously awaiting additional facilities. Both the Craft room and the Technology Lab are used on an average of 32 hours each per week, this high level of usage imposes severe constraints on the maintenance requirements. In January 1991, usage will be up to 40 hours per week, and additional space will be required; in 1992, the demand will be even greater.

Tools and Equipment

The building and equipping of the college was done as a unified project, and many problems resulted from this type of arrangement. The tools and equipment provided for the D&T program were based on the woodwork and technical drawing programs at the senior secondary schools. These tools and equipment were never properly inventoried nor managed. The inventory made by the head of department (HoD), on his arrival, did not match that of the supplying agency. Incidentally, this matter has never been properly resolved, in that no one has been made to account for the discrepancies. This non-resolution of the matter, severely hampered the program in its first two years of operation, as no additional tools could be procured.

The tools and equipment problems need to be viewed from the perspective of its effect on the students. When the department was established, we were given the assurance that the tools and equipment problem would be resolved in a matter of weeks. However, our first and second intakes of students were severely handicapped because the promised resolution never materialised. For example, it took one year to get workbenches, two years to get power tools, measuring tapes, squares, vices, chisels, and many such basics. Fortunately, USAID / Gaborone came to the rescue with a generous emergency grant of P17,000.00.

The department now boasts an assortment of tools worth well over P200,000.00 at today's prices, and has the capacity to offer the teacher education program, using a variety of materials, tools, and processes in such areas as:

- TECHNICAL GRAPHICS
- PHOTOGRAPHY
- SCREEN PRINTING
- MODELMAKING
- WOODWORK (Hand & Machine)
- METALWORK (Hand & Machine)
- PLASTICS
- MASONRY
- ENERGY
- MECHANISMS
- STRUCTURES

With the planned expansion to accommodate 120 students, the tool inventory will be in the neighbourhood of P250,000.00, (N.B. this is for both D&T and TAP requirements).

no plan for the immediate establishment of Technical Studies. However, there was a provision in the college's program for a limited number of students to change courses. The RTA/TS and the newly arrived art lecturer took advantage of this provision, and combined forces to establish the department of Art Craft & Technology (ACT) in March of 1986. There were several similarities in the proposed Art program, and the proposed Technical studies program; these similarities coupled with the Ministry of Education's (MOE) interest in integration was one of the main reasons for combining the two subjects.

In April of 1986, 18 students enrolled in ACT as a main subject and another 40 took it as a subsidiary subject. During the first year of their program, students were required to take an even amount of art and technical studies, during the second and third years, they specialized in one of the two subjects. While this meant small classes in years 2 and 3, it was thought advisable to start small, because of the human and material resources deficiencies. This arrangement lasted for 2 intakes: 1986 & 1987, but limitations of time, coupled with the fact that very few students who entered the program had any background indicated a need for change.

In 1988 Art and Technical Studies became separate departments. Consistent with widespread desire for change, Technical Studies changed its name, and so the Department of Design and Technology (D&T) was established at MCE. Although the change in name did not mean a corresponding change in program at the CJSS level, it was a position that the RTA/TS vigorously supported, for the new name better represented a program to meet Botswana's needs and the proposed program at the college. The Department of D&T has been under the leadership of the RTA/TS, in both its original and present structure, from its inception to the present. The plans are for him to continue in that capacity until the JSEI Project ends in December 1991.

The Department of Design & Technology / MCE

The primary function of the department has been the preparation of teachers for D&T in the CJSSs. Secondly, the department facilitates the development and production of teaching / learning aids. To get an understanding of the development and activities of the department, the following headings are used for presenting the relevant information: **Facilities, Tools and Equipment, Staff, Preservice Training, Inservice Training, Linkage with the Curriculum Development Unit, and Concepts introduced to Botswana.**

Facilities

When the department began operations in April of 1986, the facilities available was that of an enlarged conventional classroom, not suitable for the majority of activities in the D&T program. The limitations of the facilities probably resulted from the fact that when they were built, decisions about the nature and purpose of the subject had not been finalised. In February of 1987, the building earmarked for Teaching Aids Production (TAP) was completed. Insights into the type of building needed for the making of teaching aids were much more appropriate. Since the types of activities for D&T and TAP were similar, and since

3. At the CJSSs, an attempt was being made to run an integrated program of technical drawing, woodwork and metalwork. The term Technical Studies was used for this integrated program. The CJSS's program was different from the senior secondary school program, in that all components of the program were meant to take place simultaneously in a single room with limited equipment. Most of the teachers were experiencing severe difficulties with this new program.

4. The senior secondary schools write the Cambridge Overseas examination, and the junior secondary schools write the locally based Junior Certificate examination, upon completion of their respective programs of study. It appeared that the new CJSS Technical Studies program was merely the first years of the senior secondary program, without cognizance of the fact that completion of the Junior Certificate represented the terminal formal education point for approximately 60% of the students. The reason for this was probably because prior to the secondary education expansion program, the Junior Certificate examination was a part of the five year secondary education program.

5. There was no locally available preservice nor inservice program to prepare teachers for the desired CJSS technical studies program.

6. The requirements for a Technical Studies teacher training program at MCE was not fully realized nor appreciated by the decision-makers.

7. Decision-makers perceptions of the benefits of the program.

8. Parents expectations that the program would provide vocational skills, as opposed to technology exploration.

9. Botswana's technical manpower needs.

10. Low level of standards with respect to craftsmanship.

In view of the government's stated educational policy, and the aims of the nine year curriculum, there was need for a wide spectrum of coordinated development activities in the subject. In order to provide a context for all developments related to Technical Studies, a philosophy paper was developed by the RTA/TS (appendix A). This document has served to give direction and cohesion to curriculum development, teacher training, program organization, and management.

Molepolole College of Education

The college offers a three year secondary teacher diploma program. In 1986 the intake was 160, and each student was required to study two main subjects for the duration of the program, and two subsidiary subjects in the first two years. The college now takes in approximately 220 students annually, students still do two main subjects, but the subsidiary subjects have been replaced by communications and study skills in the first year and an elective in the second year.

The college calendar runs from January to December. When the RTA/TS arrived, students were already settled in their programs, and there was

Staff

Design and Technology started out as a one person department. Dr. Frank C. Walton, the RTA/TS provided by USAID through the JSEI Project. He established the department in 1986, and continues to serve as its head. In the years since 1986, additional staff has been provided, but none with teacher training experience nor extensive secondary teaching experience. There is a dire need for professional development activities for the staff, however, the commitments of the HoD and the staff mitigate against such activities. There is a definite concern for the leadership of the department after the end of the JSEI Project. The department has been staffed as indicated below. The present staff is highlighted.

Frank Walton	PhD	USA	HoD	Apr. '86 - Present
Peter Minter	BEd	England	Lecturer	Jan. '87 - Dec. '87
Bushy Setabo	Dip	Botswana	Staff Dev.	Jan. '87 - Dec. '87 *
Olifile Molwane	Dip.	Botswana	Staff Dev.	Jan. '87 - Dec. '87 *
Mike Ashwell	BEd	England	Lecturer	Jan. '88 - Present
Paul Senome	Dip.	Botswana	Staff Dev.	Jan. '88 - Dec. '88 *
Emmanuel Fry	Dip.	Botswana	Staff Dev.	Jan. '88 - Dec. '88 *
C. Malongwa	BEd	England	Lecturer	Jul. '88 - Present *
F. Modisane	Dip.	Botswana	Staff Dev.	Jan. '89 - Present *

Citizen staff, identified by an asterick after their names, is limited in training and experience. The staff development program was initiated by the RTA/TS in an attempt to identify potential lecturers, and to provide some exposure to new approaches to Design & Technology for Botswana. Mr. Molwane, who was on staff development at the college is presently pursuing a first degree in England, and would like to be posted at the college upon completion in June of 1991. Mr. Modisane, presently staff development, has been recommended for further training, with a view to him returning to serve at the college. Because of the limited number of degreed Batswana, the present staff development program, which it appears will provide two lecturers, needs to be immediately expanded. It should be possible, before the JSEI Project ends to foresee an additional 2 more citizens in training for the D&T department at the college.

Preservice Training

The document (Appendix B) provides an outline of the D&T program at MCE. The program, over the years, has had to straddle two fences. Changes in the CJSSs have been slow, because of manpower shortages to effect the changes. It has been necessary, at the college, to assess present and future needs, and to prepare a teacher capable of carrying out the

present program, and yet, as a recently trained teacher, capable of coping with the emerging changes. The present program in the CJSSs is a skill based one, while the emerging program is a technology exploration program with the appropriate knowledge/skill base orientation.

As mentioned earlier, resource deficiencies constrained the size of the operations in the early days. However, there has been a systematic expansion, and it is anticipated that in 1992 we will have the capacity to cater to 120 students, 40 in each year grouping. Desire and suitability of the candidates is an additional variable in the expansion of the department. With more students having the opportunity to take D&T at the secondary school level, it is anticipated that the goal of an intake of 40 students per year will be realized. The first D&T graduates completed in 1988. Completion data is indicated below:

Year of Comp.	Females	Males	
1988	03	04	
1989	01	08	
1990	00	16	(Based upon 16 third years in class)
1991	01	20	(Proj. based upon 21 2nd yrs in class)
1992	00	33	(Proj. based upon 33 1st yrs. in class)
1993	Total of 40		(Proj. based upon # of applications)

There is a fair distribution of the present graduates across the country, our records indicate: Francistown, Gabane, Gaborone, Gweta, Kanye, Lobatse, Madinare, Mochudi, Molepolole, Morapong, and Serowe.

Current Departmental Data

Year	Females	Males	Contact hrs. / wk.
1st	00	33	12
2nd	01	20	12
3rd	00	16	12

Staff comprises of: 1 Head of Department, 2 Lecturers, and 1 Staff Development

Student contact hours per term	576
Dept. maint. & development per term	384
Teaching aids production per term	240
Other college activities per term	200

Above is based upon a 12 week term.

In-service Training

During the years 1986, 1987, and 1988 the department offered in-service programs to approximately 40 teachers per year. These in-service programs lasted a full week, and were conducted during the school vacations. The thrust of these programs was the organization, management, and development of resources for teaching D&T as a multiple activity program at the CJSSs. This function has now been taken over by a team of Field Education Officers (FEOs).

Linkages with the Curriculum Development Unit (CDU)

Up until January 1989, there was no Curriculum Development Officer (CDO) for D&T. Since his arrival in 1986, the RTA/TS had involved himself, informally, in the curriculum development process for the CJSS program. This involvement took a more structured approach in 1988. This involvement resulted in the recruitment of Mr. Terence Peleowetse to serve at the CDU, first as a materials development team (MDT) member and subsequently as the CDO. Together the RTS/TS and the CDO/D&T set in motion the process of curriculum change in D&T, from a skill based woodwork / metal work / technical drawing program to a technology exploration program. The philosophy paper, referred to earlier, has served as the cornerstone for this new program. MCE and the CDU continue to be linked in the development and refinement of this new D&T program.

Concepts introduced to Botswana

Based upon his assessment of the needs of the D&T CJSS program in Botswana, the RTA/TS introduced the following management and organizational concepts:

Multiple Activity Lab or Classroom (MAL or MAC) as it refers to D&T, is an arrangement whereby several different student activities, using a variety of materials and processes are going on simultaneously in an organized, non-chaotic manner. It facilitates a technology exploration program being carried out without a large inventory of tools and equipment. Under this arrangement, the teacher instead of being the fountain of all required knowledge and the one who solves problems, assumes the role of a manager of a practical learning laboratory.

Learning Activity Package (LAP) A LAP is a written educational resource that guides a student or a group of students through a co-ordinated series of learning experiences. It usually has a practical component to it.

Work Stations (WS) A work station in the D&T lab, is an area set up to allow a specified activity or set of activities to be economically (in terms of space, time, resources) and effectively carried out.

Student Management System (SMS) Makes the learner to take on some of the responsibilities for managing his/her learning environment.

Student Information System (SIS) A SIS is based upon (a) the teacher stimulating in the minds of the students a need "to know", (b) the availability of information in an easily consumable form, and (c) the teacher not providing all the solutions to students' problems. Under these conditions, students can and will find out for themselves, using the convenient provisions organized by the teacher.

B. DPSM IN-SERVICE POSTS BY SUBJECT

Appendix R

TOTAL GRANTED DPSM IN-SERVICE POSTS.

Number of DPSM in-service posts granted in 4/88 was 8.

Number of DPSM in-service posts granted in 4/89 was 12.

Number of DPSM in-service posts granted in 4/90 was 14.

Total number of DPSM in-service posts is currently 34.

DISTRIBUTION OF GRANTED DPSM IN-SERVICE POSTS BY SUBJECT.

	<u>4/88</u>	<u>4/89</u>	<u>4/90</u>	<u>TOTAL</u>	<u>Filled</u>	<u>Vacant</u>
English	2	1	2	5	3	2
Mathematics	1	2	2	5	3	2
Science	2	1*	2	5	2	3*
Setswana	1	1	1	3	0	3
Social Studies	0	2	2	4	2	2
Agriculture	0	2	1	3	1	2
Home Economics	1	1	1	3	0	3
Design & Tech.	1	1	1	3	2	1
Physical Ed.	0	0	1	1	0	1
Religious Ed.	0	0	1	1	0	1
<u>Art</u>	<u>0</u>	<u>1**</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1**</u>
Total	8	12	14	34	13	21

* This in-service post is temporarily being filled by the science equipment coordinator.

** This in-service post was designated to be temporarily used by the systems specialist, but I understand now that he remained seconded from UTS until now, so the post is vacant.

C. Estimate needs for 1991/92.

1. I understand that the British ODA In-service project will provide us with 21 additional FEOs sometime in 1990. The ten British citizens now working as FEOs will likely be appointed. This could bring our total number of FEOs to 55 by the end of the year.

2. I understand that in the manpower projections for 91/92, the secondary department has asked for an additional 28 FEOs. This would bring the total number of FEOs to 83 by the end of 1991. I had expected that the department would request 14.

The secondary department cannot cope with this level of field expansion given the difficult we have experienced in establishing housing, offices, and vehicles for the FEOs. If the planning office were to assist us with housing and offices, as we have requested many times, then we could cope.

Housing Needs for In-service Field Education Officers.
Secondary Department, MOE

Assumptions:

- Twenty DPSM FEO posts in present, 89/90, establishment.
- Fourteen new DPSM FEO posts to be granted in 90/91, 91/92, etc.
- Twenty-four FEOs in ODA project posts by 1/91, each of three year duration.

Note: FEOs are older officers and will usually require a three bedroom house.

Total Number of in-service FEO Posts

	<u>4/90</u>	<u>1/91</u>	<u>4/91</u>	<u>4/92</u>	<u>4/93</u>
# of FEOs	34	58*	72*	86*	100*

* Includes 24 ODA project posts.

Number of In-service FEO Posts by Location

	<u>4/90</u>	<u>1/91</u>	<u>4/91</u>	<u>4/92</u>	<u>4/93</u>
<u>Maun**</u>	4	7	8	10	12
<u>Francistown**</u>	8	11	12	14	16
<u>Selebi Phikwe**</u>	4	7	9	10	12
<u>Palapye</u>	7	10	12	13	15
<u>Serowe**</u>	4	7	9	11	12
<u>Mochudi</u>	2	5	7	9	10
<u>Molepolole**</u>	3	6	8	10	12
<u>Lobatse</u>	7	10	12	14	16
<u>Kanye**</u>	1	1	1	1	1
Total	40	64	78	92	106

** Includes one secondary Regional Education Officer.

REVISED 1990 CALENDAR

IN-SERVICE STAFF DEVELOPMENT/SECONDARY DEPARTMENT

- 15 to 19 Jan. FEO PLANNING MEETING.
Oasis Motel.
- 2 to 5 April LEVEL ONE TRAINING WORKSHOP FOR NEW FEOs.
Thapama Lodge.
- 7 to 11 May FEO PLANNING MEETING.
Oasis Motel.
- 30/7 to 3/8 INSPECTION AND SCHOOL EVALUATION WORKSHOP FOR
SEOs. University of Botswana. (CANCELLED)
- 3 to 7 Sept. FEO PLANNING MEETING.
Oasis Hotel.
- 10 to 14 Sept. LEVEL TWO TRAINING WORKSHOP FOR NEW FEOs.
Mochudi Education Centre.
- 26 to 30 Nov. LEVEL THREE TRAINING WORKSHOP FOR FEOs.
Mochudi Education Centre.

Other Calendar Events:

- 12 to 18 Aug. Science and Technology Careers for Women Workshops,
Gaborone and Francistown.
- 13 to 22 Aug. SADCC Tenth Anniversary Conference, Gaborone.
- 19 to 24 Aug. Teachers College, Columbia University/Peace Corps
Sponsored Maths/Science In-service Workshop, Mochudi
Education Centre.
- 20 to 23 Aug. Workshop for heads of senior secondary science
departments, UB INSET.
- 3 to 8 Sept. International Trade Fair, Gaborone.

NOTE: If you see conflicts with other events, please let me know so an attempt can be made to revise the schedule. Please inform the ITEA of other planned training sessions.

REVISED 7/90.

History

In early 1977, the National Commission on Education carried out the first comprehensive evaluation of the education system since independence. Based on wide participative consultation throughout the country, recommendations for the future of education were developed, contained in the report *Education for Kagisano*, and accepted by Government, as translated into national policy by the National Assembly in late 1977. The Commission was reconstituted in 1979 to assess progress on the implementation of the plan. Thus, there has been a clear strategic thrust to development efforts in education for the past decade and a precedence for gathering information, formative feedback, and policy adjustment to effect educational development.

A more recent set of assessments of the education system was carried out by the Ministry of Education through the IEES Project. The initial report, *Botswana Education and Human Resource Sector Assessment* (1984; updated in 1986, with addendum each year), led to the JSEI Project (1985), targeting the junior secondary subsector as a priority area. The IEES Project has remained linked to the Planning Unit in the Ministry of Education and continued to work on the generation of timely system information for the managerial level of the ministry and the long-term maintenance of relevant databases for system planning and policy analysis. JSEIP has been linked primarily to the Deputy Permanent Secretary's Office and the Department of Curriculum Development and Evaluation, less directly to the new Department of Teacher Education, Department of Secondary Education, and Molepolole College of Education, and peripherally to the Department of Primary Education, University of Botswana, Primary Teacher Training Colleges, and the new Tonota College of Education. The information needs addressed are departmental, programmatic, or substantive. These two closely related projects promote and encourage research and routine information maintenance from the system level down through specifics of content and method issues for the classroom.

Research Areas

Research in JSEIP and IEES has been guided by the Commission and General Assembly arguments for educational development. Their recommendations have set in motion rapid system growth, vast structural changes, and new and innovative instructional developments. The research provides rich description and thoughtful reflection to inform policy assessments and adjustments. The following selected papers provide some indication of research scope.

Systemic. Most of the work dealing with general system issues is handled by the Planning Unit of the MOE. Staff members of the unit are seconded to the MOE from the Ministry of Finance and Economic Planning. Their brief is to provide information for efficient program planning and development across the various professional departments. The IEES Project has played a prominent role in these endeavors and the supportive training necessary to develop the capability of the unit. The papers below reflect the ministry-wide concerns of the Planning Unit; current efforts are focused on the development of the education section of the National Development Plan 7.

Burchfield, S. A. (1990). *Educational Planning Projections*. Gaborone, Botswana: Planning Unit.

Hartwell, A. S. (1988). *Systems Development: Activities and Products for the Botswana Ministry of Education Planning Unit*. Gaborone, Botswana: JSEI and IEES Projects.

Snyder, C. W., Jr., & Nagel, J. (1988). *Indicators of Quality in Botswana Primary Education*. Gaborone, Botswana: IEES.

Windham, D. M. (1988). *Improving the Efficiency of Educational Systems: Indicators of Educational Effectiveness and Efficiency*. Tallahassee, Florida: IEES.

Departmental. The Department of Curriculum Development and Evaluation was created by the National Commission. JSEIP was designed to assist in the institutional and professional development of this department. Research in this area has focused on the organizational issues entailed in both internal development and external lateral links of the department with other facets of the ministry and school system.

Allen, P. J. (1989). *Policies Guiding the Department of Curriculum Development and Evaluation*. Gaborone, Botswana: JSEIP.

Meyer, J. W., & Nagel, J. (1989). *Policy and Organization in Curriculum Development in Botswana*. Gaborone, Botswana: JSEIP.

Nagel, J. (1990). *Organizational Issues in Curriculum Development in Botswana: A Follow-up Report*. Gaborone, Botswana: JSEIP.

Snyder, C.W., Jr. (1990). Affective Context of Schools as a Potential Indicator of Teacher Receptivity to Instructional Change and Teacher Worklife Quality. In D. W. Chapman & C. A. Carrier (Eds.), *Improving Educational Quality: A Global Perspective*. New York: Greenwood Press.

Student Reports from the Florida State University/University of Botswana joint Masters Program. (1988). *CJSS School Descriptions and Attitudes to the Nine Year Educational Programme*.

Programmatic. The Nine Year Education Programme, as proposed by the National Commission, was initiated in earnest about 1983, after appropriate infrastructure was in place or under development. Based on extensive consultation, this program entailed wide-ranging instructional changes to meet the expectations of the public and to render the curriculum more 'relevant' and 'practical.' IEES sponsored University of Botswana research to examine the policies and practice of community consultation in Botswana education, and JSEIP helped to organize a national consultative conference series to provide feedback and continuing information from the various relevant constituencies concerned with implementation of the program.

Cownie, D., & Ives, L. (1990). *Art Education and Art Employment Research Survey*. Gaborone, Botswana: SLAPAC and JSEIP.

Meyer, J. W. (1990). *Community Concerns: Public Expectations and Educational Development in Botswana*. Gaborone, Botswana: JSEIP.

Molutsi, P. (1989). *Strengthening Local Education Capacity Through Community Involvement*. Gaborone, Botswana: University of Botswana and IEES.

Snyder, C. W., Jr. (Ed.). (April, 1988). *Therisana Ka Thuto: Community Consultation on Basic Education for Kagisano*. First Conference Proceedings. Tlokweng, Botswana: Ministry of Education. And Noel, K. (Ed.). (September, 1988 and April, 1989). *Therisana Ka Thuto: Community Consultation on Basic Education for Kagisano*. Second and Third Conference Proceedings. Selebi-Phikwe and Maun, Botswana: Ministry of Education.

Not only has there been concern about consultation, but also performance of students in the program. Curriculum change must be accompanied by examination adjustments and improvements to take into account the professed intentions of the new instructional program. JSEIP has provided extensive assistance and training to the Department of CD&E in this area.

Moahi, S., & Bowers, J. E. (1988, 1989, 1990). *Research and Testing Centre Research Notes*. Gaborone, Botswana: RTC (continuing series).

Nitko, A. J. (1989). *New Direction for Educational Testing at the Junior Secondary Level*. Gaborone, Botswana: JSEIP.

Nitko, A. J. (1990). *Implementing Criterion-Referenced Examinations in Botswana: Recommendations for JC Examination Reform*. Gaborone, Botswana: JSEIP.

Sigman, V. A., & Randal, M. (1989). *The World of Educational Innovations*. Gaborone, Botswana: Curriculum Development Unit and JSEIP. (computer simulation game and teaching notes)

Substantive. The JSEI and IEES Projects have collaborated on a number of research activities focused on the classroom during the past four years, when expansion and restructuring particularly at the junior secondary level have been most notable. Ethnographic analyses, questionnaires, and extensive field observations have provided a rich information base for the consideration of educational context and status in the light of dramatic system growth and instructional, structural, and substantive changes. Consultative seminars within the ministry have supplemented the dissemination of papers and the formal discussions of their implications for instructional policy and practice.

Marope, M. (1989). *Suggested Procedures for Assessing the Educational Needs of Junior Secondary School Leavers Entering Post-JC Training*. Gaborone, Botswana: University of Botswana and JSEIP.

Noel, K. (1989). *Report on Interviews with Teachers Who are Trialing New English Materials*. Gaborone, Botswana: JSEIP.

Snyder, C. W., Jr., & Ramatsui, P. R. (Eds.). (1990). *Curriculum in the Classroom: Context of Change in Botswana's Junior Secondary School Instructional Programme*. Gaborone, Botswana: Macmillan.

Project Scope

- *Complex Organized System of Problems* -- project must attend to the various implications of its interventions; this usually involves activity in various subsectors of the system; the balance between apparent solutions and their load for other parts of the system is difficult to achieve; projects should have the resources to flexibly react to the implementation effects of the interventions across the sector
- *Sector Assessment* -- a sector assessment is a political list of "wants" carried out in consultation with higher MOE officials; although the political agenda is extremely important, additional consultation is required at the operational levels if the project hopes to avoid resistance and have lasting impact; also the context described by the higher officials rarely exists
- *Contextual Analysis* -- there should be some preparation for advisor activity, possibly under the advisement of an "organizational" specialist relevant to the country; types of information: understand the "real" duties of local personnel, perceived training needs, tasks and problems faced in the short-term; examine systems in place, why things are done in a certain way (they "work" in the context and have evolved to deal with contextual problems) and assess what things fit with the project approach; set up to minimize system-trauma, both in terms of the organization and the fit of the intervention in the operational and policy environment
- *Needs Assessment* -- in dealing with "wicked" problems and open systems, as in education, needs are defined by their related solutions; projects must continue to carry out needs assessments throughout the life of the project

Project Implementation

- *Communication Links* -- the project should look for ways to produce lateral links in relevant instructional subsystems (see Meyer, 1990; Nagel, 1990); this is the operational side of contextual analysis
- *Organizational Problems* -- organizational ambiguities in terms of areas of responsibility should be explicated and attended to before they paralyze project activities and focus unwanted attention on the project (e.g., CD&E and DSE)
- *Intervention Level* -- usually find lack of experience with and knowledge of the proposed project intervention, so the first level is "awareness"; need to grab on to active methods and procedures for improvement so that the intervention deals with perceived problems (in other words help individuals solve their immediate problems); focus effort at the outset to assess effectiveness of the intervention and demonstrate the effective package in context to those among the target group
- *Expertise* -- use "experts" in specific instructional areas if significant change is anticipated; procedural guidance not enough given low capacity of development system
- *Focus of Effort* -- the activities and (possibly) expertise involved in materials production is different from that required for institution building; decisions need to be made early and publicly so that there is commitment to and scheduling for the effort; if institution building, then inform consultants that they are there to help local officers rather than develop products (e.g., Merryfield); if product, then long-term consultant required (e.g., Ives); if consultant produces product, then locals evaluate; if locals produce materials, then consultant provides critique and feedback
- *On-the-Job Training* -- if the emphasis is on production, then training must be organized independently of the production process or it will get limited attention
- *Intervention vs Catalyst to Change* -- there is considerable sensitivity about change and who controls it; local authorities and professionals want to "own" the change so projects cannot impose top-down interventions without encountering considerable resistance and even hostility; the presence and influence of the project serves as a catalyst to change; the project can enhance its influence by being persuasive rather than rigid "logframe implementers"; logframes are rarely developed in association with the target stakeholders and lines of authority and approval are rarely clearly articulated before the project starts to operate; the way to persuade is to have good information
- *Information vs Power* -- the project has an agenda and the advisors usually have a distinct point of view with respect to that agenda; if project personnel gain organizational power, then project activities are more likely to be put into place, but with long-term

- tradeoffs; the project then relies on the individual rather than the intervention; there may be more to gain by using information, but rejecting the associated power, to move others; persuasion rather than clout
- *Intervention Complexity* -- most sexy and dramatic innovations will be too complex for extant developing systems; the "gimmick" wins the contract but will be incompatible with the capacity of the intended recipient system; accommodations always take place; critical components must be identified so that the intent of the intervention is not lost
 - *Don't Accommodate on Quality* -- when projects settle for less they end up with nothing; once project potential is assessed within the context, then the best possible should be attempted; quality will always decay; if low quality is achieved, then that's that; this assertion is weighed against institutional capacity
 - *Promises, Promises* -- projects take more time than they do; impacts take a great deal of time, more time than a project has; there is a tendency to take shortcuts to achievements by "doing" rather than "developing"; the project should proceed on the right track and accomplish credibility rather than empty products that approach unrealistic promises (e.g., education can't create jobs)
 - *Project Identity* -- if the project takes on an identity of its own, then it is also likely to operate independently; although more difficult, the intention should be to work within the organizational infrastructure; frequent project meetings and internal consultations can produce the image of a separate culture, an image that is already there and needs to be broken down rather than reinforced; the fine line between "producing" a project image for external visitors and contract recognition of accomplishment and fitting in is difficult to follow
 - *Meetings Can Waste Time* -- meetings have their place and are particularly effective at conveying information and strengthening relationships; when they are blindly used for management appearances or unfocused discussions, they take away valuable time and can cause internal frustrations; a project doesn't need to be an institution -- the project coordinator can serve the role of cross communicator, supplemented by needed focused meetings of the relevant personnel
 - *Reports Can Waste Time* -- reporting should be minimized to that which is actually to be used in project management or project marketing; well designed reports are more likely to be read and used

Project Research

- *Inadequate Information* -- there is usually very little information available that is useful for the implementation of a project; even project documents cover larger substantive issues, but are not sufficiently detailed, contextually relevant, or accurate for project work; a first step is information collection and familiarity activities
- *Independent Variable Fallacy* -- treating the intervention as a "constant" independent variable, particularly in an evolving, developing system, can lead to misunderstandings; analyses and formative evaluations of interventions must attend to "what is the intervention" in each context and across time; if experimental paradigms are employed, then the context must be circumscribed, but this, in turn, limits the validity of the "experiment" when "going to scale"; coupling "deep descriptions" with "trials" may be the way to anticipate problems and identify successes; "good" description is a good way to start
- *Inappropriate Level of Information* -- most logframes specify indicators in terms more conducive to project acceptance and appearance than reality; few projects can have the impact claimed; the indicators tend to highlight system impact -- projects, on the other hand, tend to have localized impact or contribute to on-going modernization as part of other influences; the objectives should be the focus rather than the predetermined indicators and the indicators of those objectives questioned if inappropriate
- *Distilling the Linkages between Activities and Outcomes* -- we learn so little from cumulative projects because there is no reflection on why things worked and didn't work; external evaluators don't have the time or detailed contextual knowledge to fully reverse the loss; most people seem to feel that local conditions prevail and override generalized considerations; unless the project is reflective, chances are the linkage is weak and unsustainable
- *Research for Credibility* -- the image of investigator rather than know-it-all is more acceptable in Botswana; research supports that image and provides useful information as well; researched solutions are more likely to be accepted than "imported" ones; research also establishes contacts with the intended stakeholders and the contact is more "listening" rather than "telling"

- *Sharing the Information* -- research provides a common base for further discussion about change and the problems associated with change; consultation with a broad spectrum of the education system about project relevant research will improve the research and its likely impact; this needs to happen more than once, at various levels of the system, and in different contexts to maximize the effect
- *Adjustments to the Intervention* -- research may better inform project interventions, both in terms of how to go about it and in diagnosing its implementation problems and successes; progress in instructional development and implementation is more likely to be incremental
- *Research is Easy at First* -- educators in Botswana are less likely to be jaundiced from previous experiences with poor research; rural school personnel may really enjoy the research activities; don't dirty the water for future research -- plan well, consult broadly, provide feedback, and get the best researchers possible
- *Institutionalization of Research Capabilities* -- building in-country capacity for good research is likely to be very difficult; good exemplars may be a good start; collegial associations also is a good strategy; the final requirement is to find some place in the organization that can sustain the effort with quality -- at the moment this will be difficult in the ministry instructional system
- *Research Trail* -- a project should leave a publication trail for future efforts in the area; good work and information should be documented in lasting form; there is good evidence that education has changed substantially over the years and yet we revisit reforms almost periodically; since reforms emerge from value conflicts in influential constituencies, it is useful to document encounters with each movement, as represented by the particular project "mythology," so that future engagements are well informed; research can also alter attitudes about reforms and therefore enters the change equation itself
- *Comparative Research* -- decision makers and developers seem to pay particular attention to comparative information; project research should take this into account and provide a mechanism for cross-cultural, cross-national research (e.g., IEES, see Chapman and Carrier, 1990)