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BOTSWANA
EDUCATION AND HUMAN RESOURCES
SECTOR ASSESSMENT UPDATE

March, 1986

Coordinated for the Government of Botswana by the Improving the
Efficiency of Educational Systems (IEES) Steering Committee

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LIST OF ACRONYMS

| | |
|--------|---|
| ATC | Advanced Teachers Course |
| ATTS | Automotive Trades Training School |
| BIAC | Botswana Institute of Administration and Commerce |
| BRIDEC | Brigades Development Center |
| CDE | Curriculum Development and Evaluation |
| CDU | Curriculum Development Unit |
| CEO | Chief Education Officer |
| CJSS | Community Junior Secondary School |
| COSC | Cambridge Overseas School Certificate |
| DANIDA | Danish International Development Agency |
| DSE | Diploma in Secondary Education |
| EHR | Education and Human Resources |
| EO | Education Officer |
| FAP | Financial Assistance Policy |
| FTE | Full-Time Equivalent |
| GDP | Gross Domestic Product |
| GPO | Government Printing Office |
| IDM | Institute for Development Management |
| ISD | Instructional Systems Development |
| JC | Junior Cambridge (examination) |
| JC | Junior Certificate |
| JSEIP | Junior Secondary Education Improvement Project |
| JSS | Junior Secondary School |
| LIEF | Labour Intensive Employment Fund |
| MCOE | Molepolole College of Education |
| MFDP | Ministry of Finance and Development Planning |
| MLGL | Ministry of Local Government and Lands |
| MOE | Ministry of Education |
| NDP | National Development Plan |
| NFE | Nonformal Education |
| NLC | National Literacy Campaign |
| PEIP | Primary Education Improvement Project |
| PSLE | Primary School Leaving Examination |
| PTC | Primary Teacher Certificate |
| PTTC | Primary Teacher Training College |

REO Regional Education Officer
RTC Research and Testing Center

SBU School Broadcasting Unit

TAPU Teaching Aids Production Unit
TTC Teacher Training College

UB University of Botswana

UNESCO United Nations Educational, Social, and Cultural
Organization

UNICEF United Nations Children's Fund

USAID United States Agency for International Development

UTS Unified Teaching Service

VTC Vocational Training Centre

BOTSWANA EDUCATION AND HUMAN RESOURCES
SECTOR ASSESSMENT UPDATE

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1.0 INTRODUCTION

1.1 BACKGROUND

This sector assessment update (SAU) report has been prepared as a supplement to the original Botswana Education and Human Resources Sector Assessment (June, 1984). That report was coordinated for the Government of Botswana by the Ministry of Finance and Development Planning (MFDP) and the Interministerial Steering Committee in cooperation with the United States Agency for International Development (USAID). The original sector assessment report was seen as establishing a foundation or base-line document which could be extended and revised as new issues arose or new data became available.

Since publication of the sector assessment report the Government of Botswana has become a participating member of the USAID-financed Improving the Efficiency of Educational Systems (IEES) project. The contractor for the project is a consortium of institutions headed by the Florida State University and including the State University of New York at Albany, Howard University, and the Institute of International Research. The IEES project, under the direction of the interministerial IEES Steering Committee, will provide a variety of research, analytical, and training activities in Botswana over the next decade.

The initial post-assessment activity of the IEES project was to provide technical personnel to assist government and the local USAID mission in design of a bilateral project to promote improved quality in junior secondary education. As a result of this process a project agreement was signed in April, 1985 between government and USAID for the activity entitled the Junior Secondary Education Improvement Project (JSEIP). Project activities under JSEIP will begin in late summer, 1985.

The decision to commission this SAU report was a collaborative one among government, USAID, and IEES personnel. It was determined that there were three areas in which either

substantial change had occurred since the original assessment or where the assessment had provided inadequate detail. Thus, it was decided to prepare "updated" reports in the following areas: the economic and financial status of the education and human resources (EHR) sector; teacher training; and the primary and secondary education curriculum.

The attention focussed on economic and financial issues was justified because of the dramatic improvement in the Botswana economy over the last eighteen months. In addition, the development of plans for National Development Plan (NDP) VI meant that more detailed and current information was available on projected development and recurrent expenditures.

The continued policy concern for educational quality and the dramatic changes in the pre-university education system prompted the decision to update the areas of teacher training and curriculum. The timing for this analysis is especially propitious because of the initiation of the new junior secondary curriculum, the planned change in the structure of secondary education (the move of Form III from junior to senior secondary education), and the changes in the teacher training system (e.g., the opening of the Molepolole College of Education and the restructuring of programs at the University of Botswana).

The work on this SAU report took place in April-May, 1985, in Botswana under the direction of the IEES Steering Committee. The Steering Committee was chaired by the Ministry of Education (MOE) and included participation by the MFDP, the Ministry of Home Affairs, the Ministry of Local Government and Lands, the University of Botswana, and USAID. A three-person consultant team was provided to government by the IEES project.

1.2 NATIONAL EDUCATIONAL GOALS

The broad goals for education discussed below have been drawn from the draft of the 1986-1991 National Development Plan VI.

EDUCATIONAL OBJECTIVES

1. The purpose of education at all levels will continue to be to prepare Batswana for useful, productive lives with special emphasis on rural development and employment generation. Basic skills of literacy, numeracy and knowledge that will enhance self-reliance are important ingredients of such an education. Such skills are a preparation for full-time or part-time schooling, future employment, and self-employment.
2. The Ministry of Education will coordinate post-primary education and related training programmes in all sectors in order to maintain standards and to relate all such programmes to National Manpower needs. In consequence, vocational and technical education and training opportunities will be increased, and student numbers as well as the number of relevant courses at the university will be expanded.
3. Educational opportunities will be increased for all age groups because education is the key to development. Every effort will be made to reduce inequalities of educational opportunity within the limits of available resources.
4. During the next five years coordination between various sectors of education will be strengthened with the ultimate aim of providing continuing access from the primary level, through formal and non-formal opportunities to post-primary education and training.
5. The cooperation between local communities and the Ministry of Education will be improved with the aim of increased participation in planning and decision-making by PTA's, local school boards and other institutions. Experience has shown that this is also an effective and efficient way of using resources.
6. During the plan period the recommendations of the National Education Commission will continue to be reviewed in order to relate these to present and future developments.

In order to achieve the above objectives, the Ministry of Education plans to take the following actions:

--There will be a gradual but determined move to improve the education service by better integration of its component sectors and by decentralizing as much as possible day-to-day executive responsibility to the district level. Emphasis will be on coordination of personnel as well as use of physical facilities for educational purposes at district level.

- Professional training of education personnel will be undertaken within the context of an integrated education service. All aspects of education will feature an initial and inservice training.
- The use of media throughout the educational system will be enhanced and managed by an Educational Broadcasting Service and other agencies.
- Career guidance and counselling throughout the educational system will be improved.
- The bursaries system will be reviewed in order to ensure equal access to education. No child should be deprived of education for lack of financial resources.

1.3 EHR DEVELOPMENTS IN BOTSWANA: December, 1983-May, 1985

The last eighteen months have seen a series of significant changes in the structure and operation of the EHR system in Botswana. Many of these changes have been congruent with proposals included in the original EHR assessment report. The policy effect of the original assessment has been due largely to the close collaborative work between the IEES personnel and the government staff and the quality and cooperation of the personnel in the EHR ministries.

The following list represents a selection of the policy recommendations of the assessment and indicates the nature of progress that has been made since December, 1983 in each area:

- Improvement of primary school quality (preparation for Phase II of Primary Education Improvement Project; curriculum revision; materials distribution).
- Quality enhancement of junior secondary education (JSEIP; development and dissemination of new junior secondary curriculum; new school construction).
- Closer linkage of vocational/technical education to job market needs (planned opening of four Vocational Training Centres; planned recruitment of VTC students from Form II rather than Standard 7 graduates; enhanced labour market information; more focussed programme at Polytechnic and Automotive Trades Training Centre; implementation of the Apprenticeship Bill of December, 1983).
- Utilization of private resources for EHR support (government-community partnership in junior secondary

education; Apprenticeship Bill requirements for linkage with and utilization of private sector facilities and personnel).

- Improvement of teacher training structure and programmes (opening of Molepolole College of Education in 1985; revision of University of Botswana teacher training programmes; evaluation and improvement of inservice programmes as part of JSEIP and PEIP II activities).
- Improved coordination of management training (implementation of May, 1983 agreement among Institute of Development Management, Botswana Polytechnic, Botswana Institute of Administration and Commerce, and the University of Botswana).
- Improved EHR data (Survey of Training Needs and Conditions of Work, 1984; National Manpower Development Planning, 1984; related research and reports by the
- Central Statistics Office, the Employment Policy Unit, the Department of Labour, the Directorate of Personnel, and the MOE Planning Officers).
- Improved utilization of manpower in government employment (Performance Improvement Strategy implemented in response to President's Circular No. 1 of 1984).

Each of these policy initiatives will be discussed in more detail in the chapters that follow.

The breadth and significance of these initiatives of reform and improvement are truly impressive. The receptiveness of government to research and to data-based analysis provides optimism in terms of the substantial challenges that remain in the EHR sector. With enlightened assistance by donors and a continued high level of commitment by government personnel, the pursuit of equity, efficiency, and excellence in the EHR system can be expected to continue.

2.0 SUMMARY SUBSECTOR REVIEWS

2.1 INTRODUCTION

In the three chapters that follow detailed updates are provided on the topics of the economic and financial context of the education and human resources (EHR) system, on teacher training, and on curriculum. In this chapter, summary updates will be made of the other EHR subsectors that were included in the original assessment report. These are:

- Primary Education;
- Secondary Education;
- Vocational/Technical Education and Training;
- Higher Education;
- Management Education and Training; and
- Non-formal Education

These summary updates are not intended to provide either the breadth of coverage or the depth of analysis included in the original assessment. However, the updates do include discussion of the significant changes that have occurred in each of the subsectors in the last eighteen months (November, 1983 - May, 1985) and analysis of the implications for the larger EHR sectoral activities.

These summary updates have two major purposes. The first is to provide current information for those individuals who have not been involved in Botswana EHR programs since the original assessment. The updates will give these persons a clearer understanding of the current state of educational practice, planning, and policymaking in the subsectors. The second purpose is to provide a context for an understanding and appreciation of the issues raised in the more detailed update chapters. Each of the subsequent chapters -- economics/finance, teacher training, and curriculum -- include issues and activities that touch on a variety, if not all, of the other subsectors. A major methodological justification for

the sector assessment approach has been that one can work effectively in a subsector only if one understands the context and linkages of that subsector with the EHR system and the larger social economy. The summary updates provided here are designed to assure some of that same methodological advantage to the presentation of the three detailed subsector chapters that follow.

A survey of the EHR subsectors at this time is especially useful in that the National Development Plan VI is in preparation. While the plans and programs of NDP VI do not deviate dramatically from the macro-policy orientation of NDP V, there are important changes in the relative emphasis among subsectors and, of course, in terms of new programs and activities. Both the summary updates and the three full update chapters will emphasize the emerging NDP VI policy orientation of the EHR sector.

A minor disadvantage in terms of timing is that the 1984 educational statistics have not yet been published. Since advance data for 1983 were included in the original assessment, there is not always a basis for detailed statistical comparisons of the changes that may have occurred since the assessment. However, the new data that are available in draft form have been combined with extensive discussions with practitioners, administrators, planners, and researchers to provide a more accurate picture of developments in the EHR system since late 1983. Wherever appropriate, the recent changes in the EHR sector are discussed in terms of the longer term trends of Botswana social and economic development.

2.2 SUBSECTOR UPDATES

2.2.1 Primary Education

Between 1979 and 1984 primary education underwent a period of stable expansion. Year-to-year growth rates in enrollments varied between 3.5 percent and 8.9 percent with an average of 5.7 percent for the NDP 5 period. The number of schools increased from 394 in 1979 to 512 in 1984. Under NDP V,

primary education was identified as the highest priority sector. As universal primary education was approached, concern has shifted from aggregate access to issues of quality and distributional equity (among regions and between rural and urban areas). In 1981, 83.2 percent of the children 7 to 13 years of age were enrolled in primary education. This is an outstanding achievement for the Botswana system and is indicative of the government's commitment to access and the ability to implement programs to achieve the government's stated goals.

While substantial achievements were made in the area of teacher quality, the government recognizes that much remains to be done. The provision of teachers becomes an increasing problem as educational access is extended to smaller communities. The national maximum for students per teacher in primary education is 45 but the actual student/teacher ratio is approximately 32:1. The effect of small classes in rural schools has been offset only partially by multi-grade instruction by the individual teachers.

Table 2.1 presents the growth in schools, classrooms, and enrollments, by district, between 1979 and 1984. The average number of pupils per school has changed from 397.6 to 409.7. This apparent stability disguises two countervailing changes, i.e., some urban schools became larger while a large number of small rural schools were opened.

Creation of new primary education facilities was one of the less successful areas of NDP V. Of a scheduled 1,720 new classrooms, only 1,540 had been added by 1984. In 1979, 1,720 (36 percent) of classes were without a classroom of their own. By 1984, there were still 30 percent of the primary classes either sharing a classroom (either simultaneously or on a shift basis) or attending school in the open.

Even with the rapid growth in enrollments, the MOE has managed to increase the proportion of trained teachers in primary education from 64 percent in 1979 to 71 percent in

TABLE 2.1
EXPANSION OF PRIMARY EDUCATION, BY DISTRICT
1979 - 1984

| District | NUMBER OF SCHOOLS | | NUMBER OF CLASSROOMS | | ENROLMENTS | |
|---------------|-------------------|------|----------------------|------|------------|--------|
| | 1979 | 1984 | 1979 | 1984 | 1979 | 1984 |
| North East | 27 | 31 | 179 | 248 | 8748 | 10308 |
| Central | 128 | 161 | 1072 | 1642 | 59407 | 74248 |
| Kgatleng | 30 | 33 | 202 | 266 | 9605 | 10709 |
| Kweneng | 48 | 64 | 369 | 538 | 17327 | 25861 |
| Southern | 57 | 81 | 365 | 517 | 20433 | 28147 |
| South East | 12 | 14 | 131 | 176 | 5933 | 6976 |
| Kgalagadi | 20 | 18 | 82 | 129 | 4276 | 5294 |
| Ghanzi | 12 | 16 | 70 | 118 | 2506 | 3545 |
| North West | 33 | 45 | 189 | 279 | 10579 | 14580 |
| Gaborone | 10 | 22 | 132 | 267 | 6504 | 12587 |
| Francistown | 7 | 10 | 112 | 163 | 4873 | 6651 |
| Lobatse | 6 | 7 | 72 | 86 | 3073 | 4464 |
| Selibe-Phikwe | 4 | 7 | 78 | 121 | 3400 | 5472 |
| Jwaneng | 0 | 3 | 0 | 43 | 0 | 930 |
| TOTAL | 394 | 512 | 3053 | 4593 | 156664 | 209772 |

Source: Ministry of Education, Education Statistics. Central Statistics Office, 1985.

1984. Also, as indicated in Table 2.2, the distribution of trained teachers by districts has been improved.

The programmes of NDP V stressed qualitative and equity concerns as well as providing for the general expansion of educational access. A special NDP V programme created hostels for selected primary schools in remote, rural areas so as to promote attendance and retention. Among the major qualitative programs under NDP V (many of them supported by PEIP - the Primary Education Improvement Project) were:

- curriculum revision and dissemination;
- expanded inservice training;
- improved textbooks and support materials;
- expanded school broadcasting program; and
- increased central government subsidy to local councils (Pl8 per child in 1984).

A recent supplement to these activities has been the MOE initiative in regard to disabled students. Following establishment of an MOE policy assuring access for disabled or handicapped students, a special unit within the MOE was created to liaison with other agencies that provide assistance to such students.

Under NDP VI primary education will remain the joint responsibility of the MOE and the Ministry of Local Government and Lands (MLGL). The latter ministry provides support to district and town councils for facilities and equipment. Primary education activities are coordinated by the Interministerial Committee on Primary Education. During NDP VI primary education will retain its present seven standard format although the eventual objective is to reorganize pre-University education into a 6-3-3 format (the 7-2-3 format proposed for 1986 is a transition to this ultimate format).

NDP VI objectives for primary education include, in addition to the normal goals of physical and personnel expansion and upgrading, the following access and quality goals:

TABLE 2.2
UNTRAINED PRIMARY SCHOOL TEACHERS, BY DISTRICT
1979 - 1984

| District | 1979 | | 1984 | |
|-----------------|--------------------|---------|--------------------|---------|
| | Number of Teachers | Percent | Number of Teachers | Percent |
| North East | 126 | 45% | 133 | 36% |
| Central - North | 143 | 36 | 188 | 32 |
| - Central | 379 | 37 | 357 | 28 |
| - Southern | 138 | 34 | 125 | 26 |
| Kgatleng | 111 | 38 | 105 | 30 |
| Kweneng | 235 | 42 | 268 | 33 |
| Southern | 258 | 42 | 287 | 31 |
| South East | 28 | 16 | 46 | 22 |
| Kgalagadi | 70 | 44 | 67 | 34 |
| Ghanzi | 31 | 38 | 46 | 32 |
| North West | 182 | 49 | 177 | 33 |
| Gaborone | 13 | 7 | 87 | 22 |
| Francistown | 37 | 27 | 23 | 12 |
| Lobatse | 3 | 3 | 20 | 17 |
| Selibe-Phikwe | 21 | 21 | 39 | 24 |
| Jwaneng | - | - | 3 | 8 |
| TOTAL | 1,775 | 36% | 1,971 | 29% |

Source: Ministry of Education, Education Statistics, Central Statistics Office, 1985

- the absorption of private Setswana-medium schools into the government system;
- the use of non-formal education (NFE) and Tirelo Shetshaba participants to provide basic education to children unserved by formal schools;
- increased equity in the distribution of equipment, supplies, and qualified teachers among and within the districts;
- improved administrative training for Education Officers and headteachers;
- increased opportunities for remediation; and
- more, and more relevant, textbooks and learning materials.

In terms of aggregate enrollment, the primary education system is expected to grow at a rate of 5.0 percent in the initial years and 3.5 percent in the later years of NDP VI.

The latter rate is only slightly above the estimated rate of population increase and indicates the system's increased approximation of universal participation. As shown in Table 2.3, total enrollments will grow from 220,400 in 1985 to 286,606 in 1991. It is anticipated that the introduction of remediation will reduce repetition at the Standard 4 level to 4 percent and that remediation plus increased access to Form I will reduce repetition at Standard 7 level to 15 percent (the 1983 rates were 12 percent and 28 percent respectively).

By 1991 an additional 2,600 classrooms will have been constructed for primary schools. This will allow 80 percent of all classes to have a classroom of their own (an additional 1,700 classrooms would be needed to reach all classes). MOE policy will stress the use of double shifts and multi-standard teaching where necessary. Special teacher training will be provided to assist teachers required to conduct multiple classes.

By the end of NDP VI the government per-student subsidy of primary education will have increased to P30 per year. The development of the Education Centres network will provide for

TABLE 2.3
PROJECTED PRIMARY SCHOOL ENROLMENT
 1985 - 1991

| LEVEL | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Standard 1 | 37,454 | 39,326 | 41,293 | 42,738 | 44,234 | 45,782 | 47,384 |
| Standard 2 | 34,891 | 36,305 | 38,118 | 40,024 | 41,428 | 42,878 | 44,379 |
| Standard 3 | 30,572 | 34,366 | 35,777 | 37,561 | 39,439 | 40,827 | 42,256 |
| Standard 4 | 33,237 | 31,592 | 35,282 | 36,826 | 38,654 | 40,586 | 42,037 |
| Standard 5 | 27,211 | 29,771 | 28,641 | 32,307 | 34,106 | 36,187 | 38,404 |
| Standard 6 | 26,238 | 26,831 | 29,327 | 28,266 | 31,812 | 33,613 | 35,661 |
| Standard 7 | 30,798 | 30,925 | 30,887 | 32,588 | 31,237 | 34,339 | 36,484 |
| TOTAL | <u>220,401</u> | <u>229,116</u> | <u>239,325</u> | <u>250,310</u> | <u>260,910</u> | <u>274,212</u> | <u>286,605</u> |

Source: Ministry of Education and Ministry of Finance and Development Planning, 1985.

increased decentralization and more proximate access by district and town councils to MOE support. It is planned that during NDP 6 closer coordination will be developed between the MOE and the MLGL in the area of pre-primary education. These programmes, as well as continued support of the aforementioned special education activities for disabled or handicapped students, will promote further qualitative and administrative improvement in the primary school system.

2.2.2 Secondary Education

Along with vocational/technical education and training, the largest changes expected under NDP VI will occur in the subsector of secondary education. These changes will be quantitative, structural, and qualitative. The quantitative change is indicated by the growth rates expected: 7.09 percent per year for junior secondary, 16.66 percent per year for senior secondary, and 8.61 percent overall. The structural change will be the shift, in 1988, of Form III from a junior secondary to a senior secondary year. This will result in a short-term decline in the number of Form III students; after the change it will be 1990 before there are as many Form III students as there were in 1984. Finally, the qualitative changes are expected to be diverse. Beginning with the introduction of the two-year junior secondary curriculum in 1986, there will be an extensive program of curriculum evaluation and revision in concert with expanded training for teachers and headmasters. The evolution of the new curriculum and teacher training activities is the central focus of the USAID-supported Junior Secondary Education Improvement Project (JSEIP).

In 1984 there were 58 secondary schools: 19 government, 4 government-aided, and 35 Community Junior Secondary Schools (CJSS). Enrolments at the junior secondary level (Forms I, II, III) increased from 14,165 in 1979 to 23,500 in 1984. For senior secondary schools (Forms IV and V) the growth over the same period was from 2,551 students to 3,865. Because of the even more rapid increase in the number of primary school

leavers the progression rate from Standard 7 to Form I declined from 38 percent in 1979 to 27 percent in 1983. This trend was reversed in 1984 when the availability of the 15 new CJSS institutions allowed almost a 40 percent progression rate.

The decision to change secondary education from a 3-2 to a 2-3 split between the junior and senior levels has led to other major changes. In addition to the new curricula for the two levels, a major aspect of the transformation is the decision to use the CJSS model for all junior secondary schools. The former government and government-aided schools will become solely senior secondary institutions.

This change promotes equality but the statistics show that in the past the CJSS institutions have been disadvantaged in terms of input and output measures. In 1984, only 73 percent of CJSS staff were qualified teachers as compared with 92 percent at government and government-aided schools; even this is a dramatic improvement over 1979 when the proportions were 59 percent versus 98 percent. Success on the Junior Cambridge (JC) examination improved in the CJSS from 31 percent in 1979 to 42 percent in 1984; however, for the same years the non-CJSS junior secondary schools had pass rates of 81 percent and 86 percent.

The new CJSS model builds on the partnership established in the past between the central government and local communities but establishes more effective qualitative safeguards than have existed heretofore. As part of the new agreement the MOE provides the community with the following:

- School buildings including classrooms, a library, administration block, and toilets;
- Furniture and equipment;
- Qualified headmaster and staff;
- Up to 50 percent of staff housing; and
- A subsidy of P40 per pupil.

In addition, where necessary, in rural areas the government will provide student hostel facilities. The local community must agree to undertake the following obligations:

- To establish a Board of Governors with school management responsibilities in line with government regulations;
- Negotiate with the Land Board for site selection and to clear the site to prepare it for construction activities;
- Appoint and sustain support staff such as the school bursar, secretary, and domestics;
- Maintain all facilities and equipment;
- Construct a cooking area for preparation of school lunches; and
- Ensure adequate accommodation for the instructional staff.

The number of Community junior secondary schools (CJSS) will increase under this programme from 35 in 1984 to 94 by 1988. By the early 1990s 150 CJSS are projected to be in operation.

Table 2.4 indicates the growth in secondary enrollments that is expected to take place over NDP VI. Although the structural adjustment in 1988 will slow this growth, the overall enrolment effect represents a significant gain in aggregate access to post-primary education. By 1991, the progression rate from Standard 7 to Form I will increase from its present level of 40 percent to approximately 70 percent. The number of Form V leavers will more than double over the NDP VI period.

During NDP VI the system of school fees and bursaries will undergo reform. Bursary entitlement will be extended to all junior secondary students and a standard fee structure will be applied at all secondary schools.

The most critical area in secondary education will be that of teacher supply. Between 1985 and 1990 the number of teachers required will increase from 1,310 to 2,275. This increase of 965 teachers will be met in part by the projected increase in the supply of qualified Botswana teachers by 661

TABLE 2.4
PROJECTED SECONDARY ENROLLMENTS, 1986 - 1991

| LEVEL | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Junior Secondary | | | | | | |
| Form I | 10540 | 12460 | 15360 | 19000 | 21000 | 23000 |
| Form II | 9649 | 9908 | 11712 | 14438 | 17860 | 19740 |
| Form III | 8949 | 8491 | - | - | - | - |
| Sub-total | <u>29138</u> | <u>30859</u> | <u>27072</u> | <u>33438</u> | <u>38860</u> | <u>42740</u> |
| Senior Secondary | | | | | | |
| Form III | - | - | 4639 | 5257 | 5876 | 6494 |
| Form IV | 2400 | 3300 | 3900 | 4500 | 5100 | 5700 |
| Form V | 2183 | 2328 | 3201 | 3783 | 4365 | 4947 |
| Sub-total | <u>4583</u> | <u>5628</u> | <u>11740</u> | <u>13540</u> | <u>15341</u> | <u>17141</u> |
| TOTAL | <u>33721</u> | <u>36487</u> | <u>38812</u> | <u>46978</u> | <u>54201</u> | <u>59881</u> |

Source: Planning Unit, Ministry of Education, 1984.

over the period. The remainder will be met through the recruitment of expatriate or new unqualified teachers. The new qualified secondary teachers will come from the College of Education, the University of Botswana, Botswana Polytechnic, and Luyengo College, Swaziland.

Table 2.5 indicates the expected supply of new teachers, by institution and program, between 1985 and 1990. Since this projection was made, analysis of the first-year College of Education teacher trainees indicates that the balance of science to arts students is almost the reverse of that shown in Table 2.5. As a result, it appears that the Diploma program in science at the University of Botswana may have to be continued, at least in the short run, to assure an adequate number of science and math teachers.

2.2.3 Vocational/Technical Education and Training

As noted earlier, the vocational/technical education area is projected to be the fastest growing area within the MOE in NDP VI. The justification for this emphasis lies in the need to provide manpower sufficient to support the continued expansion of industrial, manufacturing, and service activities in the Botswana economy. By 1986 it is projected that there will be a shortage of 16,000 artisans and technicians in Botswana. The manpower problem also has a fiscal dimension in that, at present, the higher managerial, professional, and technical areas are dominated by expatriates. These individuals are employed at salary levels substantially above those that will be required for Botswana with equivalent skills.

There also is a need to promote craft and skill training in rural areas. This training supports agricultural and livestock development as well as providing for the expansion of local income generation activities.

During NDP VI the primary objectives for technical education will be (1) to promote industrial and rural development by the decentralization of education and training facilities, and (2) to contribute towards economic growth by expanding the range of training disciplines and expanding

TABLE 2.5

OUTPUT OF NEW BATSWANA SECONDARY TEACHERS
1985 - 1990

| Institution/Program | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|--------------------------------------|------|------|------|------|------|------|
| College of Education | | | | | | |
| Dip.Sec.Ed. (Science) | - | - | - | 80 | 80 | 80 |
| Dip.Sec.Ed. (Arts) | - | - | - | 45 | 45 | 45 |
| University of Botswana | | | | | | |
| Dip.Sec.Ed. (Science) | 25 | 46 | 57 | 25 | - | - |
| Dip.Sec.Ed. (Arts) | 46 | 42 | 53 | - | - | - |
| B.Ed. + Science * | 14 | 12 | 12 | 43 | 39 | 25 |
| B.Ed. + Arts* | 46 | 32 | 31 | 47 | 50 | 38 |
| Botswana Polytechnic | | | | | | |
| Woodworking and Technical Drawing | - | 7 | 14 | 20 | 20 | 20 |
| Luyengo College | | | | | | |
| Agriculture | 5 | 11 | 11 | 15 | 15 | 15 |
| Home Economics | 6 | 6 | 6 | 10 | 10 | 10 |
| Total Math & Science | 39 | 58 | 69 | 123 | 148 | 105 |
| Total Arts | 92 | 74 | 84 | 92 | 95 | 83 |
| Total Practical Subjects | 11 | 24 | 31 | 45 | 45 | 45 |
| GRAND TOTAL | 142 | 156 | 184 | 285 | 259 | 233 |

Source: Planning Unit, Ministry of Education, 1984.

*Bachelor's of Education plus Diploma in Secondary Education (Science).

student intake and output. The vocational/technical expansion in NDP VI will take place within the context of the Apprenticeship Bill, passed by Parliament in December, 1983. Founded on a national trades testing system, the Apprenticeship Bill shifts the focus from the classroom to the workplace; in the future formal classroom training will be designed in support of apprenticeship activities.

The requirements of the Apprenticeship Bill also are designed to strengthen coordination within the subsector. In 1984, an MOE survey reported 70 organizations involved in vocational/technical training (including commercial studies) and a total enrollment of approximately 8,900 trainees. This diversity could easily lead to a fragmented and inefficient set of activities without coordinated planning of staff and facilities utilization and of graduate placement.

Within this diversity, the MOE efforts for this subsector will concentrate on four institutional groupings:

- Botswana Polytechnic
- The Automotive Trades Training School (ATTS)
- The Brigades
- The Vocational Training Centres (VTCs)

In 1984 these programs (the VTCs were not yet in operation) had a full-time equivalent (FTE) student population of 1,250. Over the life of NDP VI the Polytechnic, ATTS, the 14 Brigades, and the four VTCs will expand their total enrolment to approximately 4,200 FTE students. The distribution of this projected expansion is as follows:

| | |
|----------------------|-------------------|
| Botswana Polytechnic | - 600 new places |
| ATTS | - 130 new places |
| Brigades | - 600 new places |
| VTCs | -1,400 new places |

The major increase will be in the new VTCs. These will be located in Selebi-Phikwe, Jwaneng, Palapye, and Maun. While originally it was thought these programs would recruit from the PSLE population, the expansion of junior secondary education will allow them to concentrate on JC holders. An important aspect of the VTCs is that they also will be used for inservice training for employed workers. Each VTC will offer some combination of block release, day release, and/or evening courses. The VTC curriculum and program is being coordinated through the joint efforts of the MOE's Technical Department and the Ministry of Home Affairs' Labour Department.

Table 2.6 presents the projections of enrollments and required instructors for the Polytechnic, the ATTS, and the VTCs from 1985 to 1990 as estimated by the MOE Planning Unit in April, 1985. These more recent projections of enrolment expansion show a slightly smaller rate of growth in new student places than that cited earlier (based on 1984 projections of the Technical Department). The differences are not large, however, and the important point is that even with this expansion a residual shortage of craftsman is expected to exist in 1991 at the level of approximately 13,000 persons. However, as will be indicated in the next chapter, the combination of JC plus training is precisely the skill required if the secondary school expansion is to result in greater employment rather than a better educated, but still unemployed, worker.

The Brigades began as autonomous, self-financing units that were involved in training, production, and development. At present there are 21 Brigade Centres 14 of which are training units. While retaining most of their autonomy, the Brigades now receive the substantial subsidy of P1000 per participant per year. At the present time, the Brigade programmes are designed for primary school leavers between 16 and 18 years of age. As universal access to the JC level becomes a reality it is expected that the Brigades will begin to admit more junior secondary school leavers.

TABLE 2.6
ENROLMENT AND TEACHER REQUIREMENT PROJECTIONS
FOR VOCATIONAL/TECHNICAL EDUCATION

1985 - 1990

| PROGRAM | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|----------------------|------|------|------|------|------|------|
| Botswana Polytechnic | | | | | | |
| Students | 820 | 900 | 1080 | 1200 | 1350 | 1500 |
| Teachers | 91 | 99 | 141 | 152 | 162 | 171 |
| ATTS | | | | | | |
| Students | 155 | 170 | 190 | 210 | 230 | 245 |
| Teachers | 23 | 26 | 26 | 27 | 28 | 30 |
| VTC s | | | | | | |
| Students | - | 200 | 560 | 880 | 1100 | 1250 |
| Teachers | 24 | 56 | 62 | 90 | 112 | 112 |
| TOTAL | | | | | | |
| Students | 975 | 1270 | 1830 | 2290 | 2680 | 2995 |
| Teachers | 138 | 181 | 229 | 269 | 302 | 313 |

Source: Planning Unit, Ministry of Education, 1985.

The autonomy of the Brigades (new units may be created at the initiative of the local community) makes it difficult to forecast aggregate enrollment growth or the distribution of programs by type. The best estimate available is that, by 1990, enrollments will increase from the present 700 to 1,200-1,300. It is anticipated that this expansion will take place primarily through increased enrollments in programmes at the existing Brigades.

Coordination and the channeling of government support will remain the responsibility of the Brigade Development Centre (BRIDEC). BRIDEC will play a major role in assisting Brigades with curriculum development and reform while continuing its administrative support and coordinative functions.

The original sector assessment identified equipment/supplies and instructional staff as major constraints on the effectiveness of the vocational/technical subsector. The requirements for a worksite orientation by the Apprenticeship Bill and increased donor support for the VTCs will go far to reduce (but will not remove) the problem of inadequate equipment and supplies. However, the staffing problems will continue. Even with expanded technical training and inservice courses to upgrade current Botswana staff, there will be a continued dependence on expatriate personnel over the life of NDP VI.

The data problems in the subsector that are cited in the original assessment are being reduced through the cooperation of the Labour Department, the Employment Policy Unit, the Directorate of Personnel, the Association of Training Development Officers, the University of Botswana, the Botswana Employers Federation, and the Central Statistics Office. The recent Survey of Training Needs and Work Conditions is one product of that collaboration. It is intended that such large scale surveys will be supplemented by tracer studies of graduates of individual institutions and programmes. The result should be an improved informational base for policy evaluation and development.

2.2.4 Higher Education

The University of Botswana has continued its development in the last eighteen months along three dimensions: aggregate growth, increased range of programme offerings, and improved quality. Table 2.7 presents the enrolment statistics for the academic years 1981/82 to 1984/85. Under NDP V new departments of Law and Geology were opened and a pre-entry science program was developed. The latter activity provides remedial training in maths and science for new entrants who lack these requisite skills for their University programs.

New degree programmes have been established in Business Administration and Commerce, Demography, and in Environmental Science. Diploma and Certificate programmes have been developed in Librarianship and in Adult Education and the concurrent certificate of education for secondary teachers has been replaced by a one-year postgraduate diploma.

The NDP VI objectives for the University of Botswana include the following:

- To assist in meeting manpower needs by expansion in enrollments, especially in education and the sciences, and by development of new courses and programmes;
- To contribute to improved coordination of post-secondary education through closer relationships with other post-secondary institutions;
- To promote the University's community service function through increased offerings of private and distance education courses;
- To improve the University's research capacity through the National Institute for Development Research and Documentation;
- To reduce the need for foreign study by Botswana by developing new courses of study locally wherever these are cost-effective; and
- To restructure the bursaries program so as to place its awards in line with national manpower priorities.

Table 2.8 presents the projected enrolment statistics, by programme, at the University of Botswana from 1985/86 to 1990/91. Degree level programmes will lead the University

TABLE 2.7

UNIVERSITY OF BOTSWANA ENROLMENTS, BY PROGRAM

1981/82 - 1984/85

| PROGRAM | 1981/82 | 1982/83 | 1983/84 | 1984/85 | Change 1981/82 - 1984/85 |
|---------------------------------------|---------|---------|---------|---------|--------------------------------|
| Degree Courses (Batswana) | | | | | |
| Economic & Social Science | 279 | 290 | 333 | 350 | 71 |
| Humanities | 176 | 171 | 202 | 198 | 22 |
| Science | 128 | 145 | 147 | 209 | 81 |
| Education (B.Ed.) | 61 | 63 | 87 | 119 | 58 |
| Subtotal | 644 | 669 | 769 | 876 | 232 |
| Diploma/Certificate Course (Batswana) | | | | | |
| Statistics | 14 | 25 | 15 | 34 | 20 |
| Librarianship | 15 | 27 | 30 | 19 | 4 |
| Education, Secondary | 173 | 214 | 244 | 238 | 65 |
| Education, Primary | 11 | 19 | 19 | 19 | 8 |
| Education, Adult | 12 | 10 | 11 | 17 | 5 |
| Subtotal | 225 | 295 | 319 | 327 | 102 |
| Postgraduate (Batswana) | | | | | |
| Education | 0 | 0 | 0 | 47 | 47 |
| Master's Degree | 0 | 0 | 4 | 8 | 8 |
| Subtotal | 0 | 0 | 4 | 55 | 55 |
| Pre-entry Science Course | 158 | 153 | 210 | 140 | -18 |
| Total Batswana | 1,027 | 1,117 | 1,298 | 1,398 | 371 |
| Total Non-Citizen Students | 128 | 77 | 107 | 101 | -27 |
| GRAND TOTAL | 1,155 | 1,194 | 1,405 | 1,499 | 344 |

Source: Ministry of Education, 1985.

TABLE 2.8
PROJECTED UNIVERSITY OF BOTSWANA ENROLMENT, BY PROGRAM
1985/86 - 1990/91

| Program | 1985/86 | 1986/87 | 1987/88 | 1988/89 | 1989/90 | 1990/91 |
|---|---------|---------|---------|---------|---------|---------|
| Degree Courses (Botswana) | | | | | | |
| Social Science | 291 | 388 | 481 | 573 | 723 | 813 |
| Humanities | 236 | 276 | 318 | 365 | 437 | 493 |
| Science | 195 | 186 | 265 | 342 | 417 | 494 |
| Education (B.Ed.) | 212 | 258 | 336 | 384 | 447 | 521 |
| Subtotal | 934 | 1,108 | 1,400 | 1,664 | 2,024 | 2,321 |
| Diploma/Certificate Courses (Botswana) | | | | | | |
| Statistics | 13 | 17 | 19 | 26 | 26 | 26 |
| Librarianship | 44 | 41 | 41 | 41 | 41 | 41 |
| Education, Secondary | 211 | 130 | 0 | 0 | 0 | 0 |
| Education, Primary | 21 | 23 | 25 | 28 | 30 | 33 |
| Education, Adult | 25 | 27 | 30 | 33 | 37 | 40 |
| Accounting | 0 | 25 | 50 | 56 | 64 | 72 |
| Social Work | 20 | 62 | 89 | 100 | 113 | 128 |
| Subtotal | 334 | 325 | 254 | 284 | 311 | 340 |
| Postgraduate (Botswana) | | | | | | |
| Education | 44 | 43 | 51 | 58 | 44 | 74 |
| Library Studies | 0 | 10 | 12 | 13 | 15 | 17 |
| Master's Degree | 19 | 23 | 25 | 28 | 31 | 36 |
| Subtotal | 63 | 76 | 88 | 99 | 90 | 127 |
| Pre-entry Science Course | 140 | 140 | 280 | 307 | 338 | 372 |
| Total Botswana | 1,471 | 1,649 | 2,022 | 2,354 | 2,763 | 3,160 |
| Total Non-Citizen Students | 130 | 150 | 170 | 200 | 240 | 280 |
| Total Enrolments | 1,601 | 1,799 | 2,192 | 2,554 | 3,003 | 3,440 |

Source: Ministry of Education.

Note: Non-citizen students: It is assumed that there will be approximately 10% non-citizen students at University.

growth with an aggregate increase from 170 students to 822. Within this category the fastest growing programmes will be Social Science (30 to 282) and Education (20 to 146). A dramatic increase in degree level courses will occur by 1986/87 and a steady increase thereafter.

Enrolments in the postgraduate and pre-entry science courses are anticipated over NDP VI. The pre-entry courses expand rapidly beginning in 1987/88 and by 1990/91 will have increased by more than 250 percent of their 1985/86 levels.

The critical area of concern for any University is the quality of its instructional staff. The University of Botswana has emphasized both new staff recruitment and staff development over the last two years. In 1984, the staff establishment of the University was as shown in Table 2.9. The table also indicates the degree of localization in each department or programme. (Note: In two cases, Nursing Education and the Institute of Adult Education, the total number of Batswana in post or in training exceeds the present level of the establishment.)

For the instructional staff as a whole, the proportion of Batswana equalled 51 percent. If one adds the National Institute (where seven of the eight posts were filled by Batswana) this proportion increases to 56 percent. However, as the table indicates, there is great variation within and among the four faculties. Education, with 66 percent Batswana staff, has the highest proportion, while Science, with 38 percent, has the lowest.

The current staff development programme of the University is designed to continue the institution's efforts to promote both localization and staff quality. At the end of 1984 there were 23 Batswana studying abroad for a Ph.D. and 20 studying for Master's degrees.

In summary, the programmes of the University of Botswana appear directed to the meeting of national manpower requirements and the continued provision of community service. Under strong administrative leadership, the University should

TABLE 2.9
STAFF ESTABLISHMENT, UNIVERSITY OF BOTSWANA
AS OF DECEMBER, 1984

| Faculties/Departments | Posts | Posts Filled | Posts Vacant | Batswana Staff (In post or in training) | Batswana as Percent of Posts |
|---------------------------------|-------|--------------|--------------|---|------------------------------------|
| Education: | | | | | |
| Languages & Social Science | 5 | 5 | 0 | 2 | 40% |
| Science | 7 | 7 | 0 | 2 | 29 |
| Foundations | 8 | 7 | 1 | 3 | 38 |
| Nursing | 4 | 4 | 0 | 5 | 125 |
| Institute of Adult Education | 6 | 5 | 1 | 7 | 117 |
| Primary Education | 5 | 5 | 0 | 4 | 80 |
| Subtotal | 35 | 33 | 2 | 23 | 66% |
| Humanities: | | | | | |
| African Languages | 5 | 3 | 2 | 4 | 80% |
| English | 10 | 10* | 0 | 5 | 50 |
| French | 2 | 2* | 0 | 1 | 50 |
| History | 5 | 5 | 0 | 4 | 80 |
| Library Studies | 4 | 4 | 0 | 2 | 50 |
| Theology & Religious Studies | 4 | 4 | 0 | 1 | 25 |
| Subtotal | 30 | 28 | 2 | 17 | 57% |
| Social Sciences: | | | | | |
| Accounting | 7 | 6* | 1 | 2 | 29% |
| Demography | 2 | 2* | 0 | 1 | 50 |
| Economics | 6 | 4 | 2 | 4 | 67 |
| Law | 6 | 6 | 0 | 2 | 33 |
| Political & Adm. Studies | 6 | 5 | 1 | 3 | 50 |
| Sociology | 4 | 3 | 1 | 3 | 75 |
| Statistics | 6 | 5 | 1 | 3 | 50 |
| Subtotal | 37 | 31 | 6 | 18 | 49% |
| Science: | | | | | |
| Biology | 6 | 5 | 1 | 6 | 100% |
| Chemistry | 6 | 6 | 0 | 1 | 17 |
| Environmental Sciences | 6 | 6 | 0 | 2 | 33 |
| Geology | 4 | 4 | 0 | 2 | 50 |
| Mathematics | 7 | 7 | 0 | 1 | 14 |
| Physics | 6 | 6 | 0 | 2 | 33 |
| Pre-entry science | 10 | 8 | 2 | 3 | 30 |
| Subtotal | 45 | 42 | 3 | 17 | 38% |
| University Total | 147 | 134 | 13 | 75 | 51% |

Source: University of Botswana, 1985

* Indicates department with supernumerary or externally funded expatriate staff in addition to those shown here.

be able to maintain its program of expansion with quality enhancement through the NDP VI period.

2.2.5 Management Education and Training

Since the conduct of the original EHR assessment increased attention has been directed by government toward the improvement of administrative and management capacity. Structurally, the management education and training programmes have developed in line with the May 23, 1983 agreement reached among the directors of the Institute of Development Management (IDM), Botswana Polytechnic, the Botswana Institute of Administration and Commerce (BIAC), and the University of Botswana. According to the memorandum of understanding prepared for the Department of Personnel, the individual agencies are to play the following roles in management education and training:

IDM - to engage in middle and upper management training for present employees of all sectors of the economy and for present and future management educators;

Botswana Polytechnic - to engage in supervisory management training for present and future industrial technology employees (blue-collar) in all sectors of the economy;

BIAC - to engage in supervisory management training for present and future office (white-collar) employees in all sectors of the economy; and

University of Botswana - to provide degree programmes in the administrative sciences and (through the Institute of Adult Education) to engage in management training for individuals who, for reasons of location, occupation, or qualifications, cannot gain access to the degree programs or other management training institutions.

The second major component of Botswana's development of greater management capacity was implemented as a result of the President's Circular No. 1 of 1984. This document elaborated the President's programme for improvement in the overall performance and productivity within the public service. The

goal of the programme is to optimize the utilization of resources allocated to the public sector.

The performance improvement strategy is being implemented in three ways:

- Improved rationalization of existing ministerial organizational objectives, functions, and structures and through simplification of existing operational work systems and procedures (to be implemented through an Organization and Methods review exercise);
- Increased public service efficiency by instituting a system of continuous review of organizational arrangements, work systems, and procedures; and
- Development of a specialist management services function within the Directorate of Personnel.

As this programme is expanded to more ministries a much improved data base will be developed in terms of the training requirements in the management area.

During NDP VI the new demands on management training will affect all four of the management training institutions as well as other such organizations as the Botswana Agricultural College, the Cooperative Development Centre, BRIDEC, and the Unified Local Government Service. Throughout the subsector there is a movement away from an emphasis on theory to a more pragmatic, needs-oriented programme. This will be reflected in both new course offerings and in the revision of curricula for existing courses of study.

2.2.6 Non-Formal Education

The government has defined non-formal education (NFE) as including "all organized education activities outside the regular programmes of the schools and colleges." Under this definition, NFE may be seen to be the concern of a number of ministries:

- Ministry of Agriculture (Agricultural Field Services and agricultural demonstrators);
- Ministry of Health (Health Education Unit and the Family Welfare Unit);

- Ministry of Home Affairs (libraries and museums);
- Ministry of Local Government and Lands (community development organizations);
- Ministry of Commerce and Industry (Botswana Enterprise Development Unit, rural industries unit, wildlife education unit); and
- Ministry of Education (Brigades and the Department of Non-Formal Education).

The NFE area also includes the Institute of Adult Education at the University and such voluntary organizations as the YWCA, Red Cross, and the Botswana Council of Women.

The Department of Non-Formal Education in the MOE evolved in 1978 from the Botswana Extension College. Its activities may be summarized in four categories:

- General and basic education (literacy, numeracy, and correspondence);
- Family improvement education (health, nutrition, and homemaking);
- Community improvement education (local government, cooperatives, community development); and
- Occupational education (skills development and income generation).

The major focus of NFE activities in the last two years has been upon the National Literacy Programme (NLP) and correspondence courses at the secondary level. The latter program has expanded much faster than was anticipated in NDP V.

In May, 1984 there were 9,506 correspondence students; this is more than three times the number originally estimated in the Plan. Approximately three-quarters of these students were studying at the junior secondary level. This phenomenon of rapid growth in the correspondence program is directly related to the decline in the proportion of Standard 7 leavers who could gain access to Form I prior to 1984 and the perception by students of the increased educational qualifications required by the labour market.

Unfortunately the staff and resources of the correspondence unit have not expanded in a concomitant manner. As a result the programme management, and especially the student advisors, are severely overtaxed to fulfill their obligations to students. The correspondence course was never intended to serve as more than a marginal supplement to the formal secondary system; it has now become a major alternative to it for many rural and some urban students.

In contrast the NLC has fallen short of its target of 50,000 participants per year. Both staff shortages and unsuccessful recruitment efforts are responsible for the shortfall. Of the 71,000 participants in the three-year period of 1981-1984, it is estimated that less than 50,000 completed the literacy course successfully.

Under NDP VI the correspondence program is expected to expand to 28,000 students and the NLC will continue as a development project at least through 1990/91. The latter programme will be redesigned to overcome the obstacles encountered in the last three years and post-literacy programmes will be provided in areas where NLC recruitment has been successful. The major constraint on the growth of these two programmes (and to other NFE activities) will be the lack of personnel and adequate budgeting. The NFE department in the MOE is allocated only a 1 percent per year increase in the draft NDP VI plan. Even recognizing that many of the personnel and support costs for NFE programmes appear in other budget categories (e.g., Tirelo Setshaba), this allocation is insufficient to maintain, let alone improve, the quality of the literacy or correspondence courses.

2.3 SUMMARY CONCLUSIONS AND RECOMMENDATIONS

2.3.1 Summary

In the period since drafting the original EHR assessment there has been rapid development of new approaches for dealing with the constraints and internal inefficiencies of the schooling and training system. While most of the

recommendations included in the original assessment remain relevant, the speed with which government and the donor community have moved to implement many of the recommendations is praiseworthy. As noted in Chapter 1.0 major developments have occurred in the areas of primary education, secondary education, vocational training, and management information.

The draft plan for the EHR sector for NDP VI appears educationally relevant and fiscally appropriate. If implemented as designed, the NDP VI program should result in expanded access and equity in the school delivery system, enhanced internal efficiency, and an improved preparation of graduates relative to the needs of the labour market.

The summary recommendations that follow include some areas presently under represented in the NDP VI plan and others where a continued emphasis will be required through and after the NDP VI period. In each case the recommendations must be considered in the context of the emerging changes in terms of available fiscal resources, the state of manpower supply, and the needs of the public and private sector employers.

2.3.2 Recommendations

Recommendation #1: The internal efficiency of primary education should be strengthened through improved supply and distribution of instructional materials; improving the subject area quality of PTTC graduates; expanding and enriching the inservice program; continuing the examination of distance education alternatives for direct instruction and teacher support; and enriching remedial instruction at the Standard 4 and 7 levels. As a complement to the above, consideration should be given to the role of pre-primary education in enriching the quality of the primary cycle; the availability of pre-primary education for disadvantaged students should have substantial positive effects on initial access, retention, and social equity of the system.

Recommendation #2: It will be necessary for the MOE to give high priority to the design and implementation evaluation in ongoing review and modification of the CJSS programme to determine the effectiveness of the joint government-community program of junior secondary education.

Recommendation #3: The critical role of examinations in the school programme requires that the examinations be

assessed in terms of validity and reliability and in terms of the congruence of the examinations with the curriculum.

Recommendation #4: Tracer studies of junior secondary, senior secondary, VTC, and University graduates are required as an informational input to the EHR planning process. A joint effort by the Ministry of Education, Ministry of Home Affairs, the Central Statistics Office, and the University's research staff would be the best means for dealing with this need.

Recommendation #5: Funding for the NFE activities of the MOE need to be increased to meet the demands on this department. The need is especially critical in terms of the correspondence program. Prior to or concurrent with increased funding, the management and information system for the department must be upgraded in line with the essential role of the NFE department in dealing with otherwise unserved student populations.

3.0 ECONOMIC AND FINANCIAL ANALYSIS

3.1 INTRODUCTION

The economic and financial analysis of the original Botswana EHR assessment was divided into four main activities:

- Evaluation of macroeconomic conditions and trends;
- Analysis of government's fiscal capacity to absorb increased expenditures for human resource development;
- Analysis of current and projected manpower supply and demand; and
- Analysis of the costs and returns to the major levels and types of formal education.

In this sector assessment update, the emphasis will be upon those economic and financial factors which have changed since the assessment report of June, 1984. Again, the major purpose of the economic and financial analysis is to provide a context within which the operations of the individual EHR subsectors may be understood.

The analysis will begin by reviewing the causes and effects of the improved macroeconomic performance of Botswana over the last eighteen months. With the beginning of National Development Plan (NDP) VI, it is important to assess the assumptions of aggregate, government, and EHR growth proposed for the next six years. While the basic conclusions of the original economic and financial analysis remain appropriate, certain areas -- such as teacher supply and demand -- are subject to more detailed discussion than was the case in 1983/84.

The planning unit of the Ministry of Education (MOE) has updated certain unit cost figures and these will be studied to determine if the original indicators of internal or external efficiency should be reassessed. Finally, the planning for the continuance of the Junior Secondary School (JSS) expansion,

based on the Community Junior Secondary School (CJSS) model, will be reviewed. The USAID-financed Junior Secondary Education Improvement Project (JSEIP) was initiated in May, 1985 to support the quality dimension of the JSS expansion.

The economic and financial analysis will conclude with an appraisal of government fiscal capacity and with summary conclusions and recommendations. While this update chapter does not include the breadth of statistical detail in the original analysis, it is designed to be useful even to those who have not read the original sector assessment analysis of economic and financial conditions.

3.2 THE ECONOMY OF BOTSWANA

The sector assessment identified six major characteristics of the Botswana economy:

- Dual economic basis of mining and agriculture;
- Interdependence of the traditional and modern sectors;
- Political stability and conservative fiscal management;
- Environmental fragility;
- External dependence; and
- Manpower imbalances.

During the last 18 months the economy has been dominated by the factors of environmental fragility and external dependence. The three-year drought has continued although the last rainy season provided some relief to northern Botswana. The drought, combined with a continued pattern of urban migration, has led to a situation where Botswana continues to import approximately 85 percent of its food products.

External factors, and government's positive reaction to them, were responsible for the improved macroeconomic performance in 1984. The increase in U.S. dollar prices for diamonds on the world market was magnified by the decision of the government to devalue the Pula. The net result was to increase substantially the Pula value of diamond exports.

The reasoning behind the devaluation had more to do with the South African economy than any other determinant. Inflation in South Africa had caused a dramatic decline in the Pula-equivalent prices of South African goods. Among other implications, this had the effect of threatening Botswana's own internal sales markets. The devaluation of the Pula resulted in restraining the increase in value against the Rand to 21 percent (the Pula declined relative to the U.S. dollar by 26 percent).

While the short-term effect of the devaluation may have led to a relative undervaluation of the Pula in terms of international reserves (up to P284 million from 1983 to a level of P740 million or approximately eight months of imports), the long term macroeconomic projections in NDP VI commend the policy of increasing reserves now in expectation of significant payment deficits in the next five years. A short term advantage of the devaluation exists in the area of international capital account balances. Although devaluation increases the Pula value of loan repayments it also increases the Pula value of grants and loan receipts. Since the latter are substantially larger (there was a P72 million net capital balance in 1984), the net short-run effect is a favorable one for the economy.

Led by the success in the mineral sector, the real Gross Domestic Product (GDP) grew by an estimated 12 percent in 1984. The economy enjoyed a record balance of payments surplus (P161 million or approximately 11 percent of GDP) and a government budget surplus for the 1983/84 fiscal year of P103 million (as compared to the earlier projected deficit of P46 million). The improved economic performance has carried forward into 1984/85 and a budget surplus of 141 million is being projected for FY 1985.

Even with this impressive performance, the conservative conclusions and recommendations of the sector assessment analysis remain relevant. Fortunately, the macroeconomic and budget plans for NDP VI recognize the need for maintaining a

policy of fiscal restraint. It is unreasonable to expect a continuance of the favorable external determinants of the economy - especially at present levels - but, more importantly, even the success of the last 18 months has failed to alleviate the aggregate manpower and employment problems of the economy.

Employment growth in the formal sector of the Botswana economy increased 0.3 percent to 8.0 percent in 1983. This high growth rate is misleading, however, because of the low base of formal sector employment; in 1984 only 20 percent of all employment was estimated to be in the formal sector. Approximately 7,500 - 8,000 new jobs were created in the formal sector in 1984 but there are an estimated 20,000 new entrants to the labour force annually. As pointed out in the original assessment, Botswana's development strategy is constrained by a simultaneous shortage of skilled, technical, and managerial manpower and a surplus of less skilled workers. The problem of shortage in skilled areas is a more tractable one for government policy than is the problem of unemployed, unskilled workers.

The NDP VI projections for the economy are for the annual growth rate to slow to 4.2 percent per year; this is less than one-half the annual growth rate of the last decade. Per-capita GDP is expected to grow at only one percent per year representing the continued influence of Botswana's high population growth rate (estimated at 3.3 percent per year) combined with the repatriation of workers currently employed abroad. In addition to conservative expectations on the future influence of external factors, these low forecasts reflect the lack of any new major mining activity projected during NDP VI. Stability in the minerals sector is a new phenomenon for the Botswana economy and new sources of growth in the economy will have to come from previously underdeveloped sectors.

Improvements in agricultural production would help promote GDP expansion, would improve trade and payments balances, and would reduce the migration of unskilled workers into urban areas and the formal economy. The NDP VI projections for

agriculture, even with an assumption of continued below-average rainfall, are for a 6.5 percent annual growth rate. Again, this high rate is possibly misleading because of the current low base of GDP in the sector. By the end of the plan the national cattle herd will still be below peak levels and crop output will remain below long-term average levels. Continued dependence on food imports will characterize the economy through 1991.

Manufacturing is expected to lead all sectors in growth with a 9 percent rate over the NDP VI period. This forecast assumes noninflationary wage increases, no more than moderate variation in exchange rates, and a continuance of government support for the private sector (as characterized by the Financial Assistance Program). The primary constraint on manufacturing growth will be possible shortages of venture capital and skilled manpower.

The government sector is projected to continue its growth rate at 6.5 percent or almost 50 percent above the rate for GDP growth. Development expenditures will be held to a growth rate of 2 percent per year. In part, this level is constrained by the recurrent budget implications of present and past development activities.

Table 3.1 presents the GDP growth rates from NDP V (1979/80 - 1984/85) and for NDP VI (1985/86 - 1990/91). Annual growth rates for each sector in each of the two plan periods are presented. The GDP calculations are based on volume of production and are in terms of 1979/80 factor prices. Thus, the GDP figures presented are more relevant for employment considerations and less relevant for welfare (income purchasing power) considerations.

The largest growth areas in NDP V were mining, transport, and manufacturing. For NDP VI the leading growth sectors are manufacturing, water and electric, and agriculture. Construction activities will decline from an annual growth rate of 6.6 percent in NDP V to 1.9 percent in NDP VI. Other sectors showing significant declines in their growth rates are

TABLE 3.1
GROSS DOMESTIC PRODUCT (1979/80 PRICES)
Millions of Pula

| SECTOR | 1979/80 | 1984/85 | 1990/91 | ANNUAL GROWTH NDP 5 | ANNUAL GROWTH NDP 6 |
|---------------------------------|---------|---------|---------|---------------------------|---------------------------|
| Agriculture | 75.3 | 96.4 | 140.5 | 5.1 | 6.5 |
| Mining | 217.6 | 591.0 | 626.9 | 22.1 | 1.0 |
| Manufacturing | 29.2 | 51.7 | 82.9 | 12.1 | 8.2 |
| Water and Electricity | 15.0 | 17.8 | 27.0 | 3.5 | 7.2 |
| Construction | 36.4 | 50.0 | 56.1 | 6.6 | 1.9 |
| Trade, Hotels | 157.0 | 189.7 | 238.6 | 3.9 | 3.9 |
| Transport | 13.6 | 27.3 | 36.9 | 15.0 | 5.2 |
| Financial Services | 42.8 | 49.2 | 68.0 | 2.8 | 5.5 |
| Social and Personal Services | 20.9 | 34.6 | 47.7 | 10.6 | 5.5 |
| General Government | 81.6 | 127.9 | 180.7 | 9.4 | 5.9 |
| TOTAL GDP | 689.4 | 1,235.6 | 1,505.3 | 11.9 | 4.2 |

Source: Ministry of Finance and Development Planning,
"Draft Macroeconomic Outline of NDP VI."

transport (15.0 percent to 5.2 percent), social and personal services (10.6 percent to 5.5 percent) and government services (9.4 percent to 5.9 percent). By far the largest decline, however, is in the mining sector which grew at 22.1 percent during NDP V but is projected for a very modest 1.0 annual growth rate in NDP VI.

Table 3.2 presents the government budget for each year from 1985/86 to 1990/91. All figures are in current prices and millions of Pula. The percentage distribution of revenues by source will change as follows over the NDP VI period:

| <u>SOURCE</u> | <u>1985/86</u> | <u>1990/91</u> |
|--------------------|----------------|----------------|
| Customs Revenue | 23.7% | 28.2% |
| Mineral Revenue | 47.7 | 36.0 |
| Other Income Taxes | 12.9 | 16.6 |
| Other Revenues | 10.9 | 14.4 |
| Grants | 4.6 | 4.9 |

The relative decline in mineral revenues -- directly related to the projections of reduced growth in mining activity -- will be offset by significant increases in all other categories of revenue except for grants.

In NDP VI, the percentage distribution of government expenditures, by category, will change as follows:

| <u>CATEGORY</u> | <u>1985/86</u> | <u>1990/91</u> |
|----------------------------|----------------|----------------|
| Recurrent Expenditures | 57.1% | 60.0% |
| Debt Interest | 4.1 | 3.6 |
| Development Expenditures | 29.1 | 24.8 |
| Net Lending to Parastatals | 9.8 | 11.6 |

As projected, ministerial recurrent expenditures will increase slightly, while development expenditures decline to less than one-fourth of all government expenditures.

As indicated in Table 3.2, the budget is projected to shift from a surplus to a deficit in 1987/88 and by 1990/91 the deficit of P261 million will be equivalent to 18.2 percent of total annual expenditures and 22.2 percent of annual revenues. Even with new loan procurement, the cash balance of government will be in deficit by 1988/89 and in 1990/91 the cash balance will be minus P183 million. These data justify the

TABLE 3.2
GOVERNMENT BUDGET, CURRENT PRICES
MILLIONS OF PULA

| | 1985/86 | 1986/87 | 1987/88 | 1988/89 | 1989/90 | 1990/91 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|
| <u>Revenues and Grants</u> | | | | | | |
| Customs Revenue | 178 | 217 | 234 | 273 | 324 | 331 |
| Mineral Revenue | 358 | 334 | 394 | 402 | 412 | 423 |
| Other Income Tax | 97 | 110 | 124 | 143 | 167 | 195 |
| Other Revenue | 82 | 100 | 121 | 141 | 158 | 169 |
| Grants | 36 | 39 | 43 | 47 | 52 | 57 |
| TOTAL REVENUE | 751 | 800 | 916 | 1,006 | 1,113 | 1,175 |
| <u>Expenditure and Net Lending</u> | | | | | | |
| Ministerial Recurrent Expenditure | 392 | 460 | 538 | 629 | 736 | 861 |
| Interest on Debt | 28 | 31 | 36 | 43 | 48 | 52 |
| Development Expenditure | 200 | 225 | 252 | 283 | 317 | 356 |
| Net Lending to Parastatals | 67 | 80 | 96 | 116 | 139 | 167 |
| TOTAL EXPENDITURE | 687 | 796 | 922 | 1,071 | 1,240 | 1,436 |
| Budget Surplus Deficit | 64 | 4 | - 6 | - 65 | - 127 | - 261 |
| <u>Financing Items</u> | | | | | | |
| Repayment of External Loans | 24 | 19 | 22 | 29 | 32 | 42 |
| New Loans | 60 | 69 | 79 | 91 | 105 | 120 |
| Change in Cash Balance | 100 | 54 | 51 | - 3 | - 54 | - 183 |

Source: Ministry of Finance and Development Planning,
"Draft Macroeconomic Outline of NDP VI."

aforementioned fiscal conservatism displayed by government in the current period of economic prosperity.

Table 3.3 presents a comparison of recurrent expenditures, by ministry, in 1984/85 and 1990/91. Also provided are percentage distributions for each of the two years and the annual growth rate over the NDP VI period. The final column of Table 3.3 presents the average annual development expenditure planned for each ministry. By a substantial margin, the Ministry of Education budget has the highest growth rate of all ministries (10.1 percent) and only the Financial Assistance Policy (FAP)/Labour Intensive Employment Fund (LIEF) subsidy programme has a higher growth rate in the government budget. By 1990/91 the MOE budget is expected to represent 27.2 percent of all expenditures as compared to 22.1 percent in 1984/85. The effect of the high growth projected for the FAP/LIEF programme will increase this category's percentage of all expenditures from 0.9 percent to 2.3 percent over the NDP VI period.

Education ranks second in annual development budget with a projected average of P30 million. This is second only to works and communications with a P50 million average. It should be noted, however, that the P15 million for Mineral Resources and Water Affairs does not include funds for the Central Power Station.

It was noted in the original EHR assessment report that the imbalance between the rates of GDP growth and government budget growth versus the growth of the MOE budget poses substantial policy issues for Botswana. As the growth of the economy and of government revenues is reduced, the high growth rate of educational expenditures will imply greater opportunity costs vis-a-vis other government activities and non-government sectoral activity. The main conclusion to be reached is that the MOE must attempt to improve the efficiency of its current programs and consider internal and external efficiency criteria in the design of all new development activities. Only in this way can education be a catalyst for development rather than a constraint upon it.

TABLE 3.3
 RECURRENT EXPENDITURE, BY MINISTRY
 1984/85 AND 1990/91
 (1984/85 PRICES)

| <u>Ministry</u> | PROJECTED RECURRENT EXPENDITURE 1984/85 (P 000) | PERCENTAGE DISTRIBUTION 1984/85 | TARGET RECURRENT EXPENDITURE 1990/91 (P 000) | PERCENTAGE DISTRIBUTION 1984/85 | ANNUAL GROWTH RATE (%) | ANNUAL DEVELOPMENT EXPENDITURE (P million) |
|-------------------------------------|---|---------------------------------------|--|---------------------------------------|---------------------------------|---|
| Parliament | 1,378 | .5% | 807 | .2% | N.A | 0 |
| State President | 38,068 | 13.0 | 41,680 | 9.8 | 1.52 | 5 |
| Finance and Development Planning | 13,846 | 4.7 | 16,261 | 3.8 | 2.72 | 3 |
| Home Affairs | 8,444 | 2.9 | 10,726 | 2.5 | 4.07 | 1 |
| Agriculture | 27,193 | 9.3 | 31,415 | 7.4 | 2.43 | 8 |
| Education | 64,555 | 22.1 | 115,119 | 27.2 | 10.12 | 30 |
| Commerce and Industry | 5,843 | 2.0 | 7,409 | 1.7 | 4.03 | 3 |
| Local Government and Lands | 45,875 | 15.7 | 72,608 | 17.1 | 7.95 | 15 |
| Works and Communication | 44,681 | 15.3 | 65,580 | 15.5 | 6.60 | 50 |
| Mineral Resources and Water Affairs | 14,224 | 4.9 | 15,910 | 3.8 | 1.88 | 15 |
| Health | 21,150 | 7.2 | 30,607 | 7.2 | 6.35 | 10 |
| Administrative Justice | 1,050 | .4 | 1,050 | .2 | .00 | 0 |
| Attorney General | 730 | .2 | 950 | .2 | 4.50 | 0 |
| Auditor General | 418 | .1 | 418 | .1 | .00 | 0 |
| External Affairs | 2,762 | .9 | 3,110 | .7 | 2.00 | 2 |
| FAP/LIEF | 2,500 | .9 | 9,878 | 2.3 | 25.73 | N.A |
| TOTAL | 292,717 | - | 423,528 | - | 6.35 | 142 |

Source: Ministry of Finance and Development Planning,
 "Draft Macroeconomic Outline of NDP VI."

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3.3 AGGREGATE MANPOWER SUPPLY AND DEMAND

In the last five years the government has developed one of the most detailed and sophisticated programmes for manpower planning that exists in Africa. The methodology used for the manpower demand forecasting is described in detail in the EHR assessment. Stated briefly, manpower demand for each sector is derived from the employment/growth coefficients for each sector with the sector growth rates taken from the MEMBOT (Macroeconomic Model for Botswana) forecasts. The distribution of employment by education and training characteristics is determined from the existing sectoral distributions modified by expected changes in the capital versus labour intensity of sectoral activity and by survey data such as that in the Survey of Training Needs and Conditions of Work, 1984, prepared by the Labour Statistics Unit of the Central Statistics Office.

The forecasting of manpower supply has been improved with expanded coordination between the Employment Policy Unit of the Ministry of Finance and Development Planning and the various education and training programs. In preparation of NDP VI plans, manpower data played a critical role for such agencies as the University of Botswana, the Botswana Polytechnic, the Automotive Trades Training School, the Brigades, and the four proposed Vocational Training Centres.

The improved quality of the data and forecasts and the increased utilization of such data in planning activities should be understood in the proper context. Manpower data is inevitably indicative rather than definitive. The statistical uncertainties associated with forecasts of demand and supply are compounded with changes in the adaptability of the labour market itself. Thus, the data discussed below should be understood to represent a best approximation of reality. Where significant levels of over- and under-supply exist this will be emphasized as not subject to simple statistical variation. Where such levels are less significant the planner must remain committed to flexible planning responses. Otherwise, it is easy to transform labour shortages into surpluses, and

vice-versa, within just a few years. The conclusions reached in the original EHR assessment and in the report National Manpower Development Planning 1984 (December, 1984) are quite similar in content. The magnitude of the currently estimated labour imbalances are such that the major conclusions of these two reports may be taken with confidence.

Table 3.4 presents data on the manpower imbalances as they existed in 1981 and 1984. Between the two years, substantial progress was made in reducing the shortage of secondary graduates. The shortage of those with a university degree or higher has been relatively stable in actual numbers and has been reduced as a proportion of the available labour force. However, for workers with a primary education or less, the surplus increased by almost 12,000 over the period although there was a slight decline in the imbalance as a percentage of the available labour force.

NDP VI draft projections expect the working age population (citizens aged 15-64) to grow at a rate of 20,000 per year with an additional 2,000 Batswana working abroad returning each year to Botswana as their employment opportunities in the SouthAfrican mines are reduced. NDP VI projections indicate that domestic employment may be expected to grow by only 11,400 per year (7,600 in the formal sector, 2,600 in self-employment, and 1,200 as domestic servants). The slower growth rate expected for NDP VI will exacerbate current employment conditions and may lead for the first time to significant unemployment or underemployment at the secondary school leaver level. This is a critical issue at a time when educational output is increasing at all levels but especially at the Junior and Senior Secondary levels.

Table 3.5 presents the latest projections of primary enrolments and graduates for the years 1984, 1985, 1990 and 1991. Table 3.6 presents similar data for the junior secondary, senior secondary, and post-secondary educational levels. As indicated in the latter table, Form III will be

TABLE 3.4
MANPOWER SUPPLY AND DEMAND, BY
EDUCATIONAL LEVEL
1981 and 1984

| ITEM | 1981 | 1984 | CHANGE 1981-1984 |
|---|---------|---------|---------------------|
| <u>Manpower Requirements</u> | | | |
| Primary or Less | 192,668 | 209,306 | 16,638 |
| Secondary | 36,647 | 41,953 | 5,306 |
| Degree or Higher | 2,151 | 2,517 | 366 |
| TOTAL | 231,466 | 253,776 | 22,310 |
| <u>Labour Force Available</u> | | | |
| Never at School | 218,219 | 221,856 | 3,637 |
| Primary or Less | 205,121 | 229,462 | 24,341 |
| Secondary | 25,130 | 39,869 | 14,739 |
| Degree or Higher | 662 | 1,015 | 353 |
| LABOUR AVAILABLE | 449,132 | 492,202 | 43,070 |
| <u>Manpower Imbalances</u> | | | |
| Primary or Less | 230,673 | 242,012 | 11,339 |
| Secondary | -11,516 | -2,084 | 9,432 |
| Degree or Higher | - 1,489 | -1,502 | -13 |
| TOTAL | 217,668 | 238,426 | 20,758 |
| <u>Imbalance as a Percent of the Labour Force Available</u> | | | |
| Primary or Less | 54.49 | 53.62 | |
| Secondary | -45.83 | -5.23 | |
| Degree or Higher | -224.88 | -147.99 | |
| TOTAL | 48.46 | 48.44 | |

Source: National Manpower Development Planning 1984, Employment Policy Unit, MFDP.

TABLE 3.5
PRIMARY EDUCATION ENROLMENTS AND LEAVERS
1984, 1985, 1990, 1991

| ITEM | 1984 | 1985 | 1990 | 1991 | RATE OF GROWTH 1985-1990 |
|-------------------------|---------|---------|---------|---------|-----------------------------|
| Standard 1 | 36,013 | 37,454 | 45,782 | 47,384 | 4.10 |
| Standard 2 | 31,025 | 35,312 | 43,400 | 44,918 | 4.21 |
| Standard 3 | 29,084 | 30,716 | 41,520 | 42,974 | 6.21 |
| Standard 4 | 34,209 | 32,568 | 40,740 | 42,182 | 4.58 |
| Standard 5 | 26,624 | 28,076 | 35,327 | 36,721 | 4.70 |
| Standard 6 | 24,731 | 25,635 | 32,358 | 34,009 | 4.77 |
| Standard 7 | 27,659 | 30,940 | 34,417 | 35,855 | 2.15 |
| TOTAL | 209,345 | 220,701 | 273,544 | 284,043 | 4.39 |
| Standard 1-6 Leavers | 5,931 | 6,058 | 7,654 | 7,954 | 4.79 |
| Standard 1-7 Leavers | 19,980 | 22,277 | 28,222 | 30,118 | 4.84 |

Source: National Manpower Development Planning 1984,
Employment Policy Unit, MFDP.

TABLE 3.6
SECONDARY AND POST-SECONDARY ENROLMENTS
1984, 1985, 1990, 1991

| ITEM | 1984 | 1985 | 1990 | 1991 | RATE OF GROWTH 1985-1990 |
|---|--------|--------|--------|--------|-----------------------------|
| <u>Junior Secondary Enrolments</u> | | | | | |
| Form 1 | 10,818 | 10,265 | 21,000 | 23,000 | 13.75 |
| Form 2 | 7,084 | 10,169 | 17,860 | 19,740 | 11.50 |
| Form 3 | 5,651 | 6,234 | | | N.A |
| TOTAL JUNIOR SECONDARY ENROLMENTS | 23,553 | 26,668 | 38,860 | 42,740 | 7.09 |
| <u>Senior Secondary Enrolments</u> | | | | | |
| Form 3 | - | - | 5,876 | 6,494 | N.A |
| Form 4 | 2,196 | 2,250 | 5,100 | 5,700 | 17.78 |
| Form 5 | 1,577 | 2,130 | 4,365 | 4,947 | 15.43 |
| TOTAL SENIOR SECONDARY ENROLMENTS | 3,773 | 4,380 | 15,341 | 17,141 | 16.66 |
| TOTAL SECONDARY ENROLMENTS | 27,326 | 31,048 | 54,201 | 59,881 | 8.61 |
| <u>Full Time Post-Secondary Education Enrolments*</u> | | | | | |
| Certificate/Diploma Enrolments | 357 | 369 | 730 | 803 | 10.46 |
| 1st Degree Enrolments | 938 | 1,006 | 2,320 | 2,320 | 20.74 |
| Post-Degree Enrolments | 54 | 59 | 147 | 165 | 11.58 |
| TOTAL POST-SECONDARY ENROLMENTS | 1,349 | 1,434 | 3,197 | 3,288 | 17.41 |

*The University of Botswana also enrolled 344 part-time students in 1984 and 339 part-time students in 1985.

Source: National Development Plan VI.

changed from a Junior Secondary to a Senior Secondary year during NDP VI; the change is scheduled to take place in 1988.

As might be expected, growth rates increase as one moves up through the educational system. The Standard 1 primary enrolments are increasing at 4.1 percent per year reflecting both growth of the entry age cohort (estimated at approximately 3.3 percent) and increased access. As Botswana approaches universal primary access this growth rate should decline.

The transition from primary to secondary education may be seen by comparing the Form 1 enrollees for a given year to the Standard 7 leavers for the previous year (this calculation ignores the effect of Form 1 repeaters and those who interrupt their education but neither factor is sufficient to affect the analysis conducted here). The transition rate for 1984/85 is 55.2 percent and that projected for 1990/91 is 81.5 percent. The average annual growth rates for Form I and Form II over the period of 1985 to 1990 are 13.75 percent and 11.50 percent respectively. Even higher rates of growth are indicated for the upper secondary levels. These large increases will pose new demands on both physical facilities and teaching staff. The critical issue of teacher supply and demand will be discussed in further detail below.

Table 3.7 combines the current projections of manpower supply and demand to forecast imbalances for the years 1985, 1990, 1991, 1996, and 2001. Obviously, the more distant the forecast the less confidence that can be placed in the scale of the estimates. However, it is important to note that by the end of NDP VI the balance for secondary graduates will be in surplus and by 1996 only a minor shortage of university degree holders will remain. These shifts toward surpluses of trained manpower will occur just as the largest increases from the present expansion of secondary education begin to appear in the labour market.

The reason for these results lies in the nature of the Botswana economy. The mining enterprises and the largest manufacturing concerns are capital intensive and these do not

TABLE 3.7
MANPOWER SUPPLY AND DEMAND BY EDUCATIONAL LEVEL
1985 - 2001

| ITEM | 1985 | 1990 | 1991 | 1996 | 2001 |
|---|----------------|----------------|----------------|----------------|----------------|
| <u>Manpower Requirements</u> | | | | | |
| Primary or Less | 220,311 | 271,031 | 280,994 | 346,131 | 430,054 |
| Secondary | 45,742 | 61,073 | 64,116 | 82,272 | 106,022 |
| Degree or Higher | 2,768 | 3,524 | 3,681 | 4,658 | 5,913 |
| TOTAL | <u>268,821</u> | <u>335,628</u> | <u>348,791</u> | <u>433,061</u> | <u>541,989</u> |
| <u>Labour Force Available (Aged 15-64)</u> | | | | | |
| Never at School | 219,023 | 186,868 | 179,508 | 142,796 | 105,767 |
| Primary or Less | 242,583 | 316,744 | 331,542 | 414,297 | 501,382 |
| Secondary | 42,781 | 76,702 | 85,748 | 142,903 | 223,712 |
| Degree or Higher | 1,159 | 2,025 | 2,286 | 4,612 | 8,505 |
| LABOUR AVAILABLE | <u>505,546</u> | <u>582,339</u> | <u>599,084</u> | <u>704,608</u> | <u>839,466</u> |
| Labour Force Growth Over Previous Year | 13,525 | 15,636 | 16,744 | 23,471 | 29,451 |
| <u>Manpower Imbalances</u> | | | | | |
| Primary or Less | 241,476 | 232,582 | 230,057 | 210,962 | 177,095 |
| Secondary | -2,961 | 15,629 | 21,632 | 60,632 | 117,691 |
| Degree or Higher | -1,610 | -1,498 | -1,396 | -46 | 2,692 |
| TOTAL | <u>236,905</u> | <u>246,713</u> | <u>250,293</u> | <u>271,548</u> | <u>297,478</u> |
| <u>Imbalance as a Percent of the Labour Force Available</u> | | | | | |
| Primary or Less | 52.29 | 46.18 | 45.02 | 37.87 | 29.17 |
| Secondary | -6.92 | 20.38 | 25.23 | 42.43 | 52.61 |
| Degree or Higher | -138.90 | -73.99 | -61.07 | -1.00 | 31.29 |
| TOTAL | <u>46.84</u> | <u>42.37</u> | <u>41.78</u> | <u>38.54</u> | <u>35.44</u> |

Source: National Manpower Development Planning 1984,
Employment Policy Unit, MFDP.

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generate employment opportunities proportionate with their growth. The emerging service sector of the formal economy emphasizes the utilization of high-level manpower but the growth rate in the sectoral demand will be more than satisfied by the normal expansion of educational output. Government, a major employer of labour in the formal sector, increasingly will be limited in the number of new jobs it can offer to school leavers. For NDP VI the overall target growth rates are 4.9 percent per year at the "A" level (degree holders and above), 4.3 percent at the "B" level (secondary leavers), and 7.2 percent for all others (this last category includes teachers). If the wages for government employees increase faster than the NDP VI projection of 2 percent per year, then the growth in government employment will have to be curtailed.

In the past there have been complaints from the private sector that government "pre-allocates" skilled manpower to its own operations. This has been described as a result of the training specializations of graduates more than an explicit policy preference of government. In NDP VI, attempts will be made to achieve a more equitable balance in the allocation of graduates between the government and private sectors.

In summary, the aggregate projections of manpower balances are encouraging for the period of the next four to five years and worrisome thereafter. A shift from shortages to surpluses does allow, theoretically, for greater selectivity in worker recruitment and for a better matching of workers to jobs. A point discussed in the initial assessment should be reemphasized here. In the next decade, the probability is that one's employment will depend relatively less on formal qualifications alone and more on one's area of specialization and on the post-school or university training received. Thus, manpower planning policy in the next decade must shift from concerns with aggregate balances to a more highly articulated view of the labour market. Fortunately, this is exactly the direction being taken by the MFDP's Employment Policy Unit and its counterpart agencies in the Ministry of Home Affairs, the

Ministry of Education, the Ministry of Local Government and Lands, and the Central Statistics Office.

3.4 TEACHER SUPPLY AND DEMAND

The area of most dramatic change since the EHR assessment was conducted relates to the supply and demand for secondary education teachers. As discussed above, the expansion of primary school enrolments is proceeding as expected and while distributional problems remain among regions and between urban and rural areas, the earlier analysis still obtains. This is not the case for secondary education where the accelerated expansion of junior and senior secondary education has combined with changes in the output of the teacher training institutions to result in the need for a reassessment of the net balances of supply and demand.

An initial effort in this regard has been made by the MOE report "The Recruitment of Secondary School Teachers, 1985-90" prepared by the Secondary Education Department and the MOE Planning Unit in December, 1984 and updated in August, 1985. In summary, the report takes either 1985 or 1986 as base-line years, depending on the analysis, and projects to 1990 the anticipated changes in teacher requirements and in the supply of qualified Batswana teachers. Commendably, modified projections are made taking into account replacement demand, expatriate teacher requirements, and subject specializations. The last represents a major improvement in the methodology of analysis used in this policy area.

Table 3.8 presents annual estimates for 1986 to 1990 of the staff requirements to meet expansion, the expected supply of new Batswana teachers, and the resulting surplus or shortage. In 1987 and 1988 transitory surpluses are seen to appear as the new teacher training programs reach maturity but these effects are soon overtaken by the countervailing effects of the enrolment expansion in the schools. The figures given do not take into account the need for new teachers to replace present teachers who leave the system or those who are unqualified for their present teaching assignments.

TABLE 3.8

SECONDARY EDUCATION TEACHER EXPANSION DEMAND AND SUPPLY
1986 - 1990

| | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| Total Staff | 1438 | 1549 | 1686 | 2002 | 2247 |
| Senior Secondary | 255 | 308 | 614 | 711 | 809 |
| Junior Secondary | 1183 | 1241 | 1072 | 1291 | 1438 |
| New Requirements | 170 | 99 | 137 | 316 | 245 |
| Senior Secondary | 20 | 44 | 306 | 97 | 98 |
| Junior Secondary | 150 | 55 | -169 | 219 | 147 |
| New Teacher Supply | 156 | 184 | 267 | 266 | 240 |
| Shortage/Surplus | 14 | 85 | 130 | -50 | -5 |

Source: "The Supply and Demand for Secondary School Teachers, 1984-90," Ministry of Education, December, 1984; "The Recruitment of Secondary School Teachers, 1985-90", Ministry of Education, December, 1984, updated August 1985.

Table 3.9 presents estimates for 1986 through 1990 of the staff needed to meet both expansion and replacement demand. The shortages forecast are much more serious than those estimated for expansion alone and suggest that it will be difficult to meet the NDP VI goals for the reduction of expatriate and untrained teachers.

The demand for expatriate and untrained teachers implied in this schedule is shown in Table 3.10.

Tables 3.9 and 3.10 indicate the appropriateness of the recent expansion of training opportunities to prepare secondary school teachers. While the short-run choice still remains one of qualified expatriates versus unqualified Batswana, the continued expansion of preservice and inservice programmes should lead to a continued decline in the dependence on expatriate instructors after 1990.

The most recent MOE analysis of secondary teacher demand, by subject area, reveals that by the end of NDP VI there will be a greater shortage of Arts teachers than Math/Science teachers. However, the analysis assumes that there will be little difficulty in recruiting students for the Math/Science curriculum in the teacher training programmes, that these students will have equivalent progression and graduation rates with other teacher trainees, and that once graduated they will remain in the teaching profession at the same rate as other teachers. Data from most other countries suggest that all three of these assumptions are questionable. The MOE treats these subject-by-subject estimates as very provisional and will monitor the situation carefully over NDP VI.

3.5 EDUCATIONAL COSTS

The purpose of cost analysis is to identify particular areas where problems with internal efficiency may exist and to allow for a comparison of the anticipated benefits to a level and type of education with its costs. In the original assessment it was the analysis of unit costs (cost per student per year) and cycle costs (cost per graduate or school leaver)

TABLE 3.9

SECONDARY EDUCATION TEACHER
DEMAND (EXPANSION AND REPLACEMENT)
AND SUPPLY 1986 - 1990

| | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> |
|------------------|-------------|-------------|-------------|-------------|-------------|
| Total Staff | 1438 | 1549 | 1686 | 2002 | 2247 |
| New Requirements | 305 | 248 | 392 | 328 | 452 |
| New Supply | <u>156</u> | <u>184</u> | <u>267</u> | <u>266</u> | <u>240</u> |
| Shortage | -149 | - 64 | -125 | - 62 | -212 |

Source: "The Recruitment of Secondary School Teachers, 1985-90," Ministry of Education, December, 1984, updated August, 1985.

TABLE 3.10

IMPLIED DEMAND FOR EXPATRIATE TEACHERS
7 UNQUALIFIED TEACHERS 1986 - 1990

| | Total Demand | Form 5 Leavers (in-post increase) | Expatriates (Total re- cruitment) |
|-----------------|-----------------|---|---|
| Maths/Science | 146 | -- | 146 |
| Arts | 304 | 109 | 195 |
| Practical Subj. | 163 | 54 | 109 |
| Total | 613 | 163 | 450 |

Note: Implied demand calculated to take account of replacement of qualified teachers. Figure for expatriate recruitment therefore includes replacement of departing expatriates. Figure for Form 5 leaver recruitment indicates increase of unqualified teacher in-post and does not include the need for recruitment to replace departing Form 5 leavers.

Source: "The Recruitment of Secondary School Teachers, 1985-90", Ministry of Education, December, 1984, updated August, 1985.

that identified the CJSS schools as a problem area in terms of internal efficiency. The unit cost to government for the three types of junior secondary schools was P751 for government schools, P395 for government aided schools, and P134 for the CJSSs. However, this apparent cost advantage in the CJSS institutions was contradicted by the calculations of cycle costs for the three school types.

Because of the combined effects of social disadvantage, prior educational disadvantage, higher parental costs (P215 per year versus P72 - P80), and poorer quality staff and facilities, the CJSS institutions had much higher rates of repetition and attrition. The student-year cost of a Junior Certificate pass was estimated at 12 years for the CJSS's compared with only 3.9 years for government and government-aided schools.

These findings and the resulting debate they generated have had two major consequences. First, government has emphasized quality improvement considerations even more in its plans for the expansion of junior secondary education. Beginning in 1988 all junior secondary schools will be of the CJSS type. The government and government-aided schools at the junior secondary level are scheduled to become senior secondary institutions. Concomitant with this change, the secondary system will move from a 3-2 to a 2-3 division with Form III moving from the junior to the senior secondary school in 1988.

The second major consequence of the assessment findings was the negotiation of a bilateral agreement between the government and USAID for the Junior Secondary Education Improvement Project (JSEIP). The project agreement was signed in April, 1985, and involves construction and technical assistance support in the critical areas of curriculum and system management. JSEIP activities are scheduled to begin in late summer, 1985.

In the eighteen months since data collection for the assessment, new unit cost rates have been calculated by the MOE Planning Unit. Table 3.11 presents a comparison of the new

TABLE 3.11
GOVERNMENT UNIT COSTS OF EDUCATION
1983/84 - 1984/85
(Pula per Year)

| ITEM | 1983/84 | 1984/85 |
|--|---------|---------|
| Primary Education | 189 | 160 |
| Secondary Education | 833 * | 733 |
| Brigades | 1000 | 1000 |
| Other Vocational/Technical | 2123 | 3160 |
| Botswana Polytechnic | 2955 | N/A |
| Automobile Training Trade School | 2428 | N/A |
| Botswana Institute of Administration and Commerce | 987 | N/A |
| Teacher Education | 938 | 1455 |
| University of Botswana | 7143 | 8079 |
| Nonformal Education | N/A | 25 |

* Government or government-aided schools only

Source: 1983/84 figures - Botswana Education and Human Resources Sector Assessment, June, 1984.

1984/85 figures - The Development of Education in the Periods 1979-84 and 1985-90, Planning Unit, MOE, February, 1985.

unit costs with those found in the assessment. These comparisons must be made with care because of the changes in cost definitions, new programmes, changes in programme definitions, and variation in government versus donor contributions to recurrent costs. However, the overall pattern of costs have not changed dramatically since the 1983/84 calculations.

Teacher education costs are higher because of the extension of programmes for secondary school teachers and general program enrichment. The lower figures for primary and secondary education indicate improved utilization of staff in a period when real wages of teachers have remained relatively constant. The only dramatic change is at the University of Botswana and this cost increase is more an inherent response to new programme emphasis (with higher costs and/or initially smaller enrollments) than of internal inefficiencies.

The MOE notes that of the P733 provided to secondary schools, the government and government-aided schools receive P831 per day student while the CJSSs receive P325 per student. During the expansion of the junior secondary system on the CJSS model, it is government's intention to increase relative support to the junior secondary program. With a planned growth rate for NDP VI estimated at between 10-11 percent per year, the expansion of educational opportunities should be substantial, especially at the upper primary and secondary level. The major constraint that exists for these plans is the salary system for teachers. The educational plan for NDP VI assumes no increase in the real pay of teachers and instructors.

Because of the paucity of new data it has not been found necessary to recalculate the cycle costs or the rates of return estimated in the original assessment. However, some discussion of these estimates is justified given the future changes that may be projected, based on the NDP VI plans and the earlier discussion of the labour market.

Analysis of cycle costs goes beyond the unit cost concept to include the effects of repetition, attrition, and successful

or unsuccessful results on school leaving examinations. These effects are detailed for the 1983 school year in the assessment subsector chapters. Data on the 1984 school year will soon be available. However, as noted above, no dramatic changes are expected. Still, the increased democratization of access to schools must manifest itself eventually in changes in the schools' internal operations (curriculum, support materials, facilities, and teacher preparation) or there will be an increased problem of repeaters and dropouts or of Primary School Leaving Examination (PSLE) failures.

Currently, government is engaged in a study of the effect of grade repetition in primary schools on the propensity for future attrition and eventual PSLE success. Given the lack of remediation activities in the school system, it may be anticipated that repeaters tend not to complete the full seven standards and, if they do, have a poor rate of success on the PSLE. Also, of 12,803 repeaters in 1983, 7,623 occurred at the Standard 7 level. For these PSLE failures simply to repeat the Standard 7 year does not appear an efficient use of their time or of the system's resources. Diagnostic examination by the MOE of the Standard 7 results for these students should be provided to the school so that a more tailored program of study could be designed. Even at a low annual cost of P160 per student (and Standard 7 costs undoubtedly are higher than this primary school average), the repetition costs for Standard 7 alone came to P1,219,680 in 1983.

With low manpower demand for students with only a primary school certificate, there will be an increasing reluctance over the next decade for students to stop at the PSLE level. The government expansion of secondary education will permit many students to continue in education who previously would have stopped at the PSLE level. The cycle costs of secondary education will remain high (as indicated by the rates in the former CJSS institutions) unless the curriculum and the teachers are willing to adapt to the needs of the changed

student population. These effects of democratization already are being felt at the University level as well.

As the pyramid of educational attainment is widened at the upper levels, apparent educational opportunity is increased. For this opportunity to be transformed into actual attainment requires an adaptive school program. At the primary and secondary level, the challenge to the PEIP II (the second phase of the Primary Education Improvement Project) and to JSEIP is to assist the government in achieving this goal. The tentative effect of these changes, and those in the labour market, on the rates of return to education, can be anticipated. However, there will be a need by the mid-point of NDP VI to reestimate the indicative rates of return to assess how closely these "anticipations" have approximated reality.

Table 3.12 reproduces the rate of return results found in 1983 and reported in the original EHR assessment. In the next five years, private rates of return may be expected to decline at the primary and junior secondary level as the quantity of school graduates expands faster than the opportunities for employment. At the level of junior secondary graduate plus training, the nominal rates of return probably will not change significantly but the return should become relatively greater than for primary school graduates or JS graduates. The returns to the Cambridge-level and University graduates may be expected to remain at their current levels over the NDP VI period but, over the longer term, the current "premium" received by these graduates, because of their scarcity relative to demand, will decline and future rates of return will depend even more on the pattern of costs incurred by government and the individual students.

3.6 GOVERNMENT FISCAL CAPACITY

The draft plans for NDP VI have not yet been approved and differences still appear between the macroeconomic and individual ministry projections of expenditure. For example, the MOE projects an annual development expenditure of P33

TABLE 3.12

INDICATIVE RATE OF RETURN ESTIMATES

| Education Level | Direct Private Costs | Foregone Earnings | Total Private Costs | Government Subsidy | Total Costs | Average Annual Increased Earnings | Private Rate of Return | Total Rate of Return |
|--|----------------------|-------------------|---------------------|--------------------|-------------|-----------------------------------|------------------------|----------------------|
| Primary Graduate | P 15 | - | P 15 | P 174 | P 189 | P 750 | - | 42% ** |
| Junior Secondary Graduate | P121 | P1,250* | P1,371 | P 427 | P1,798 | P1,250 | 76% | 41% |
| Junior Secondary Graduate Plus training | - | P1,750 | P1,750 | P 965 | P2,715 | P1,500 | 41% | 26% |
| Cambridge Graduate | P 74 | P2,000 | P2,074 | P 573 | P2,647 | P3,500 | 80% | 62% |
| University Graduate | - | P4,500 | P4,500 | P7,143 | P11,643 | P8,000 | 38% | 15% |

Source: Botswana EHR Assessment, June, 1984.

* Incurred only in last year of school only

** The total rate of return for primary education is based on the assumed employment of all graduates. Hence, the rates of return for primary graduates are exaggerated since there is more likely to be a heavier incidence of unemployment in this cohort than among the secondary graduates or the university graduates.

million per year whereas, as noted earlier, the MFDP projections are for the lower level of P30 million. Depending on whether the base year is 1984/85 (the last year of NDP V) or 1985/86 (the initial year of NDP VI), the growth rate for MOE expenditures is projected as either 10.4 percent or 11.0 percent per annum. In either case, the MOE will outrun the government average (6.8 percent) by a significant amount. It should also be understood that no new revenue generating developments are anticipated for either NDP VI or NDP VII. The implication is that the MOE's favored position eventually will be constrained by the fiscal realities of the government. A further concern is that with the continuing high birth rate of 3.3 percent, all social ministries, including the MOE, will be under pressure to maintain quality while expanding the coverage of their programmes to meet increased aggregate demand.

Between 1984/85 and 1990/91 the MOE's recurrent expenditure is expected to increase (in 1985/86 prices) from P74,748,000 to P139,039,000; the total government budget will increase from P338,791,000 to P504,164,000 in the same period. The MOE's share of total recurrent expenditures will increase from 22.1 percent to 27.6 percent. Table 3.13 presents detail on the MOE budget, by department, for 1984/85 and 1990/91.

Because instructional personnel costs are included separately under the Unified Teaching Service (UTS) item, the allocations to primary and secondary education exclude these costs. As seen in the table, the UTS item is by far the single largest component of the MOE budget. However, because of government's planned wage constraints, the UTS allocation will be expanded almost exclusively on the basis of new teachers coming into the system. By 1990/91 the UTS budget will, for the first time, represent less than one-half of the full MOE budget.

The fastest growing items in the MOE budget are technical education (26.5 percent per year), headquarters (14.5 percent), and secondary education (14.3 percent). The major investment in technical education reflects both the rapid growth expected

TABLE 3.13
 MINISTRY OF EDUCATION RECURRENT BUDGET
 1984/85 .. 1990/91

| Department | 1984/85 | | 1990/91 | | Annual Growth Rate |
|--------------------------|------------------------|---------------|------------------------|---------------|--------------------------|
| | Expenditure (P'000) | Percent | Expenditure (P'000) | Percent | |
| Headquarters* | 7756 | 10.4% | 17477 | 12.6 | 14.5 |
| Primary Education | 842 | 1.1 | 1083 | 0.8 | 4.3 |
| Secondary Education | 10357 | 13.9 | 23094 | 16.6 | 14.3 |
| Teacher Training | 1602 | 2.1 | 2404 | 1.7 | 7.0 |
| Technical Education | 2259 | 3.0 | 9241 | 6.6 | 26.5 |
| Nonformal Education | 817 | 1.1 | 868 | 0.6 | 1.0 |
| Unified Teaching Service | 41852 | 56.0 | 67528 | 48.6 | 8.3 |
| Curriculum Development | 1032 | 1.4 | 1095 | 0.8 | 1.0 |
| Bursaries | 8232 | 11.0 | 16249 | 11.7 | 12.0 |
| TOTAL | 74,749 | 100.0% | 139,039 | 100.0% | 10.9 |

*Includes the University of Botswana and the Brigades.

Note: 1984/85 figures are forecasts and 1990/91 are NDP 6 targets.

Source: Ministry of Finance and Development Planning, 1985.

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in this subsector and the continued high unit costs noted earlier. The implementation of the Apprenticeship Act and initiation of the four Vocational Training Centres will contribute to the rapid growth of this subsector from 3.0 percent to 6.6 percent of the total MOE recurrent budget.

The increase in headquarters budget (which includes the University of Botswana and the Brigades) is required to achieve the planned improvements in the administration, planning, and evaluation of MOE central and school operations. The secondary education budget will be increased as part of the transformation of structure and expansion of access to all secondary education levels during NDP VI.

Table 3.14 presents detailed cost information on the development expenditure implications of the secondary school expansion and improvement programmes. By 1991, P114.79 million will be expended on secondary education construction and modification expenses. In 1986 alone, 15 new junior secondary schools will be constructed to replace government or government-aided schools that are being changed to senior secondary institutions. In addition, eight schools are scheduled for upgrading and six new schools will be built for previously unserved or underserved communities.

The original EHR assessment, based on 1982 MOE projections, forecast a requirement for 55 new secondary schools at a total cost of P83.5 million and an annual cost of P11.9 million. The new MOE estimates, based on a larger and more rapid expansion, place the capital cost for the secondary expansion project at P114.79 million and annual recurrent costs at P19.6 million.

Without donor assistance, the MOE will have to use almost 59 percent of its development budget on this one programme. The recruitment of donor assistance in this area remains a priority for both the MOE and MFDP with the African Development Bank and the World Bank being the most likely sources of assistance.

TABLE 3.14

DEVELOPMENT EXPENDITURES FOR SECONDARY EDUCATION
1985/86 - 1990/91
(Millions of Pula)

| Year | CJSS Construction | Govt. School Improvements | Staff Houses | Total |
|---------|----------------------|------------------------------|-----------------|--------|
| 1985/86 | 14.34 | 3.70 | 0.33 | 18.37 |
| 1986/87 | 12.70 | 2.00 | 0.45 | 15.15 |
| 1987/88 | 14.50 | 2.00 | 0.55 | 17.05 |
| 1988/89 | 17.90 | 2.00 | 1.27 | 21.17 |
| 1989/90 | 18.80 | 2.00 | .99 | 21.79 |
| 1990/91 | 18.31 | 2.00 | .97 | 21.28 |
| TOTAL | 96.55 | 13.70 | 4.56 | 114.81 |

Source: "Secondary School Building Programme, 1985-91, and CJSS Construction for 1986", Planning Unit, Ministry of Education, December, 1984.

Even with these increased costs, the total MOE budget as a percent of the Government's total budget (recurrent plus development) will increase to only 19.1 percent in 1990/91. The issue of recurrent cost effects for Botswana remains an important issue nonetheless. With slower economic growth forecast and with increasing unemployment likely, it is less than probable that MOE expansion will not be slowed in NDP VII. This outlook reinforces the aforementioned need of the MOE to stress internal and external efficiency considerations in its programmes. Also, increased complementarity between the formal academic programs and the new vocational/technical training opportunities is required if the MOE is to attain its goal of improved employability for graduates from all levels and programmes.

3.7 SUMMARY AND RECOMMENDATIONS

3.7.1 Summary

The government has exercised continued to exercise fiscal constraint during the period of the last two years. Recognizing the recent higher levels of prosperity as a transient change in longer term trends, government has built up current budget surpluses and foreign reserves to a level adequate to carry government operations through the NDP VI period without undue hardship.

For the EHR sectors the expenditure trends are especially revealing. The annual MOE budget is increasing faster than the aggregate government budget and the aggregate government budget is increasing faster than the level of GDP. This indicates that there will be an increasing opportunity cost posed by the EHR activities on other governmental programs and, eventually, of government programs on the non-government sector.

A second cause of concern is the continuance of a high population growth rate (even the 3.3 percent per annum figure may turn out to be an underestimate). The effect of this population growth on the EHR systems and the labour market will be compounded by the repatriation of Botswana workers currently

employed abroad (primarily in South Africa). In the EHR system, the issue will be to meet an increasing aggregate demand for education and training while maintaining the current efforts of quality enhancement. The nature of the labour market issue is the need to find employment opportunities in a capital-intensive economy (which demands highly trained manpower) for increasingly large numbers of workers with low levels of educational attainment. A second labour market problem is whether, in the long run, there will not be a surplus production even of the more highly skilled workers. By the beginning of NDP VII, government will need a coordinated development strategy that involves generation of rural employment, expansion of EHR access and quality, and continued support of new employment opportunities in urban areas for the graduates of the secondary schools and the VTC's.

In the current period of prosperity it may be difficult to convince some individuals of the need for these longer term strategies. However, the fact that unemployment of the unskilled and less-educated workers has accelerated concomitant with the recent prosperity should alert everyone to the possible employment problems that will be incurred as the economy gravitates in the future to a lower level of real GDP growth. Fortunately, the planning staff of government have shown the ability to deal with the complex issues involved in these processes and the political system has shown the willingness to make the required difficult choices. With a continued policy of responsible planning and implementation the record of accomplishment of the Botswana economy can be maintained and even extended to a wider share of the population.

3.7.2 Recommendations

Recommendation #1: The data requirements for manpower planning should continue to be improved. While substantial progress has been made in the last 18 months in terms of aggregate data collection, these activities need to be supplemented by the detail available from institutional tracer surveys. The focus of such research should be on the secondary school leavers and graduates of the new VTCs.

Recommendation #2: The future economic condition of Botswana will require continued government fiscal restraint and an increased willingness on the part of donors to fund a larger share of development costs. Constraints on government in the area of recurrent cost absorption will be tractable only if development expenditure obligations are minimized. Flexibility in project obligations is a critical consideration given the variability in the economy over recent years and continued external dependence.

Recommendation #3: A priority concern of government over the period of NDP VI should continue to be employment generation. These activities should focus on rural as well as urban employment opportunities and special attention should be paid to the emerging service orientation of the economy. The problem of unemployment among unskilled workers will be the major barrier to continued economic stability over the next decade.

4.0 TEACHER EDUCATION

4.1 INTRODUCTION

This chapter presents an update of the sector assessment in the areas of preservice and inservice teacher education for primary and secondary school teachers.

Preservice teacher education takes place in seven programmes in three types of institutions -- four Primary Teacher Training Colleges (PTTCs), the Molepolole College of Education (MCOE), and the University of Botswana (UB). Some of these are not technically "preservice" programs since prior teaching experience is a prerequisite for programme admission. Each comprises, however, initial training for a specified set of teaching positions. The programmes at the PTTCs, the MCOE, the two diploma programmes at the University, and the secondary education programmes at the University are those closest to what usually are regarded as preservice programs.

Inservice programs have increased significantly in the last few years with a wide variety of offerings at the primary level through the PTTCs and the Primary Education Improvement Project (PEIP I) programme and a consistently growing effort at the secondary level. The primary education inservice programmes are derived from a training of trainer model; the secondary programmes are national in scope and focus on subject area. Prominent teacher education needs in Botswana are: improved coordination within the context of a fully integrated development plan; conceptualization of teacher education as a life-long process which includes training at a variety of levels within a career focus; increased curricular relevance; and improved quality of instruction.

In the following section the current status of teacher education is presented. This is followed by a description of the characteristics of the programmes and discussion of issues related to them. The analysis of these issues is then used to

identify significant needs in the subsector. The chapter concludes with a number of priority-ranked recommendations.

4.2 STATUS

The goals and strategies of Government in the field of teacher education are presented in this subsection. This is followed by a description of the location and structure of government units responsible for their implementation.

4.2.1. National Goals and Strategies

4.2.1.1. Goals. The broad goals for education discussed below have been drawn from the current drafts of the 1986 - 1991 National Development Plan VI (NDP VI). While the draft plan has not yet been accepted formally by Government, it is being used by Ministry personnel to guide national policy formulation.

The following objectives are proposed for teacher training during the NDP VI plan period:

1. To expand the output of trained teachers for primary and junior secondary schools through:
 - the preparation of a minimum of 150 junior secondary teachers per year at Molepolole College of Education with the first graduates in 1987.
 - the preparation of a minimum of 600 primary school teachers per year at the four primary teacher training colleges by 1986.
 - continued training of graduate teachers at the University of Botswana.
2. To sustain present efforts to improve the quality of teacher training through:
 - increasing the percentage of trained primary teachers to 85 percent by 1991.
 - making teacher training colleges a focal point for pre-service and in-service education, working in close relationship with the Education Centres.
 - introducing a system of self-study and evaluation at the institutions preparing teachers.
 - creating a licensing plan through which teachers can take accredited courses offered by PTTCs, Education

Centres and other institutions as a way of accelerating their training and promotion.

3. To integrate the administration of teacher education under a single department in the Ministry of Education. The tasks of this department will be to:
 - consolidate teacher education under a single department which will supervise the preparation of all teachers in the country.
 - supervise preservice and inservice programmes.
 - bring institutions preparing teachers under a policy making council which will set standards for teacher preparation.

4.2.1.2 Strategies. Government has identified and is implementing several strategies to achieve the general and specific goals listed above. Two new teacher training colleges have admitted their first students within the past four months: Tlokweng Primary Teacher Training College in January, and Molepolole College of Education in March. The first graduating class of the B.Ed. programme in Primary Education at the University is finishing its last term. The number of science majors at the University of Botswana has doubled this year. Over 20 junior secondary schools are under construction or are being renovated and an additional 29 schools will open in the next two years--necessitating an immediate need for additional trained teachers. Inservice activities were conducted in April for representatives of 60 primary schools and curriculum teams in Science, Mathematics, Home Economics, Physical Education, and Setswana at the Secondary level. Additional inservice activities are already planned for August and December.

Thus, efforts are underway to improve the quality of teaching at all levels and to increase the supply of trained local teachers. The Education Centres are due to be expanded to 14 under NDP VI and are taking responsibility for an increasingly large percentage of teacher inservice activities.

A significant percentage (58 percent) of current enrollees at the five teacher training institutions are serving teachers, and individuals who have completed service in the Tirelo

Setshaba programme. Included in the student group at Molepolole are 24 experienced primary teachers who are making a career change.

The curriculum revision process is working to integrate the junior secondary revisions with the recently completed syllabuses for the first seven standards. Syllabuses in some fields are now ready for trial at all nine levels of the new primary/junior secondary programme. The revisions, carried out by Education Officers in Secondary Education and the Curriculum Development and Evaluation Departments of MOE, include objectives, support materials, teacher's guides, and, in some cases, new textual materials as well. Teachers also are supported by materials and inservice training provided through the Teaching Aids Production Unit (TAPU).

In addition to support from a variety of other donor agencies, the efforts in teacher education and curriculum development are being supported by two USAID sponsored projects--PEIP I, Primary Education Improvement Project, and JSEIP, Junior Secondary Education Improvement Project. An extended version of the PEIP project, referred to as PEIP II is being planned. PEIP I currently operates at the MOE and the University of Botswana in support of preservice and inservice teacher education at the primary level. JSEIP will begin functioning in mid-1985, housed at the Molepolole College of Education and in three departments of the MOE. It will support overall system planning and inservice and preservice teacher education at the secondary level. Both are discussed in more detail below.

4.2.2 Structure

The structure and control of teacher education from a management perspective is unclear. Individuals involved in the management of teacher education units report to several different Chief Education Officers and university administrators. The PPTCs report to the Chief Education Officer (Primary and Teacher Training) for most operational matters but are supervised by the Board of Affiliated

Institutions in others. The Molepolole College of Education reports to the Office of the Permanent Secretary and in the future will be affiliated with the university. The programmes of teacher preparation at the University of Botswana are semi-autonomous but some personnel training, inservice, and other matters involve approval from the MOE. Inservice activities are carried out by several units within the MOE -- Primary and Teacher Training, Secondary Education, and several sections of the Curriculum and Evaluation Department. Personnel involved in the inservice programmes may be staff from any of the six teacher training institutions as well as the MOE. The planned introduction of a Department of Teacher Education in the Ministry has the potential for resolving this problem.

It is reassuring that, despite a complex management structure, the system is working harmoniously. Whether this will continue as the system grows and incurs pressures from the rapid expansion and teacher improvement activities is less certain.

The preservice programme for primary teachers takes place at four Primary Teacher Training Colleges -- Francistown, Lobatse, Serowe, and Tlokweng. The programmes will produce almost 500 teachers in 1985; at the end of 1986 and each year thereafter the number of graduates will be approximately 630. The PTTCs are affiliated with the Faculty of Education of the University of Botswana through a Board of Affiliated Institutions. The University oversees the admission regulations, the curriculum, and the assessment procedures. The diploma is given in the name of the University of Botswana. A National Council for Teacher Education serves as an advisory body.

The preservice programme for secondary teachers is handled in several ways:

- a) The Molepolole College of Education trains junior secondary teachers (its first class will graduate in 1987).

- b) The Diploma in Secondary Education programme at the University of Botswana trains junior secondary teachers but the last intake was in August 1985.
- c) The B.Ed. degree programme at the University trains senior secondary teachers and secondary education officers.
- d) The Certificate in Science & Mathematics programme at the University trains teachers in science and maths who have been teaching in other areas.
- e) The Postgraduate Diploma programme trains teachers who have a degree in a field other than education for positions in senior secondary schools.

The inservice programmes for teachers in the schools of Botswana vary to a considerable extent according to level, subject matter, and location. Inservice activities are delivered through:

- a) school site workshops delivered by Education Officers (EOs) and Regional Education Officers (REOs), Education Centre staff, and teachers from other schools.
- b) workshops conducted at one of seven Education Centres.
- c) workshops conducted at regional and/or national sites in specific subject areas.
- d) informal assistance given by head teachers, deputy heads, and senior teachers.
- e) study leaves for degree programs at the University or institutions in other countries.

Any of these workshops and training activities may be conducted by Ministry Education Officers, faculty from the PTTCs, faculty from the University of Botswana, or expatriate consultants.

4.2.3 Programmes

The topics in this subsection include the primary and secondary preservice and inservice programmes. Reported data come from a variety of sources as indicated.

4.2.3.1. Primary Teacher Training Colleges

Enrollments. The source of trained teachers for the primary school is the two year programme leading to the Primary Teacher's Certificate (PTC). An overview of the current

enrollments, staff, and facilities of the four PTTCs is presented in the Tables 4.1 and 4.2.

The four institutions have a total enrolment of 1160 students almost evenly divided between the first and second year of study. Progression rates have been constant since 1977 at levels well above 90 percent. At Lobatse, for example, only six of 180+ students failed to return in 1985 for the second year of study.

Admission requirements for the PTTCs include the Teacher Training College (TTC) Selection Examination and a brief screening interview conducted by the staff at the schools. Since 1984, the colleges have attempted to use a standard that requires beginning students to have the Junior Certificate (JC) or higher degree plus one year of experience as a teacher at a primary school. Under new procedures, 20 percent of the beginning students will be untrained primary school teachers with two or more years of teaching experience; the teachers must be recommended by their head teacher and the local education officer.

Most of the PTTC students are female (87 percent in 1983) and the PTTC at Serowe has no male students. Despite the preponderance of female students, there is no indication of any systematic exclusion of males from the PTTCs.

The 1985 enrolment data indicate that prospective teachers are being drawn from all sections of the country in a manner similar to the patterns of the past three years. As one might expect the sparsely populated sections of the country are underrepresented as the number of teachers trained from those sections continues to fall short of the number needed to staff the primary schools.

The age distribution of the 1984 students is given by sex in Part C of Table 4.2. The modal age of 20 years is the same for males and females. For the age range of 25 years and over, 26 percent of the male students are included and 31 percent of the female students. A large number of the students (351 or 37 percent of the total) are in the 19 - 22 age range. This

TABLE 4.1
PTTC ENROLMENTS BY INSTITUTION AND DISTRICT
1982-1985

| College | District | 1982 | 1983 | 1984 | 1985 | Total |
|--------------------|-------------|------|------------|------------|------------|------------|
| Francistown TTC | Northeast | 24 | 28 | 28 | 24 | 104 |
| | Gantsi | 0 | 1 | 0 | 0 | 1 |
| | Gaborone | 0 | 0 | 0 | 0 | 0 |
| | Northwest | 16 | 30 | 12 | 8 | 66 |
| | Kgalagadi | 0 | 0 | 0 | 0 | 0 |
| | Lobatse | 0 | 0 | 0 | 2 | 2 |
| | Kgatlang | 12 | 6 | 22 | 6 | 46 |
| | Southeast | 1 | 5 | 7 | 6 | 19 |
| | Kweneng | 11 | 9 | 9 | 17 | 46 |
| | Central | 75 | 79 | 80 | 77 | 311 |
| | Southern | 9 | 9 | 14 | 16 | 48 |
| | Francistown | 1 | 3 | 1 | 10 | 15 |
| | TOTAL | | <u>149</u> | <u>170</u> | <u>173</u> | <u>166</u> |
| Serowe TTC | Northeast | 8 | 7 | 8 | 3 | 26 |
| | Gantsi | 1 | 2 | 0 | 1 | 4 |
| | Gaborone | 1 | 0 | 0 | 6 | 7 |
| | Northwest | 10 | 6 | 17 | 11 | 44 |
| | Kgalagadi | 5 | 3 | 3 | 4 | 15 |
| | Lobatse | 1 | 0 | 0 | 0 | 1 |
| | Kgatlang | 7 | 7 | 11 | 11 | 36 |
| | Southeast | 6 | 3 | 3 | 5 | 17 |
| | Kweneng | 20 | 13 | 22 | 9 | 64 |
| | Central | 82 | 115 | 94 | 120 | 411 |
| | Southern | 13 | 17 | 25 | 9 | 64 |
| | Francistown | 3 | 1 | 0 | 1 | 5 |
| | TOTAL | | <u>157</u> | <u>174</u> | <u>183</u> | <u>180</u> |
| Lobatse TTC | Northeast | 4 | 5 | 3 | 8 | 20 |
| | Gantsi | 8 | 4 | 3 | 3 | 18 |
| | Gaborone | 1 | 5 | 0 | 0 | 6 |
| | Northwest | 16 | 30 | 12 | 4 | 62 |
| | Kgalagadi | 6 | 7 | 11 | 11 | 38 |
| | Lobatse | 18 | 14 | 2 | 0 | 34 |
| | Kgatlang | 13 | 10 | 14 | 23 | 60 |
| | Southeast | 13 | 13 | 6 | 16 | 48 |
| | Kweneng | 23 | 25 | 32 | 26 | 106 |
| | Central | 14 | 24 | 22 | 33 | 93 |
| | Southern | 70 | 57 | 76 | 59 | 262 |
| | Francistown | 0 | 1 | 0 | 0 | 1 |
| | TOTAL | | <u>186</u> | <u>195</u> | <u>181</u> | <u>183</u> |
| Tlokwen TTC | Northeast | | | | 10 | 10 |
| | Gantsi | | | | 0 | 0 |
| | Gaborone | | | | 0 | 0 |
| | Northwest | | | | 7 | 7 |
| | Kgalagadi | | | | 11 | 11 |
| | Lobatse | | | | 0 | 0 |
| | Kgatlang | | | | 20 | 20 |
| | Southeast | | | | 12 | 12 |
| | Kweneng | | | | 31 | 31 |
| | Central | | | | 43 | 43 |
| | Southern | | | | 28 | 28 |
| Francistown | | | | 0 | 0 | |
| TOTAL | | | | <u>162</u> | <u>162</u> | |

TABLE 4.2
CHARACTERISTICS OF PPTC FACILITIES, STAFF,
AND ENROLMENTS

A. PRIMARY TEACHER TRAINING COLLEGE FACILITIES

| <u>COLLEGES</u> | <u>CLASSROOMS</u> | <u>STREAMS</u> | <u>TEACHERS</u> | | | <u>PUPILS</u> | | |
|-----------------------|-------------------|----------------|-----------------|----------|----------|---------------|----------|----------|
| | | | <u>M</u> | <u>F</u> | <u>T</u> | <u>M</u> | <u>F</u> | <u>T</u> |
| SEROWE | 15 | 12 | 13 | 8 | 21 | - | 361 | 361 |
| LOBATSE | 15 | 10 | 14 | 9 | 23 | 90 | 241 | 331 |
| FRANCISTOWN | 10 | 10 | 14 | 10 | 24 | 69 | 238 | 307 |
| TLOKWENG ¹ | 15 | 06 | 8 | 5 | 13 | 29 | 132 | 161 |

B. NUMBER OF TEACHERS BY COLLEGE & QUALIFICATION¹

| <u>COLLEGES</u> | <u>A. T. C.</u> | <u>DEGREE AND DIPLOMA</u> | <u>HIGHER/DEGREE AND DIPLOMA</u> | <u>TOTAL</u> |
|-----------------|-----------------|---------------------------|----------------------------------|--------------|
| SEROWE | 1 | 14 | 6 | 21 |
| LOBATSE | 9 | 11 | 3 | 23 |
| FRANCISTOWN | 5 | 17 | 2 | 24 |
| TLOKWENG | - | 3 | 10 | 13 |

C. ENROLMENT BY YEAR OF STUDY & AGE²

| <u>AGE</u> | <u>YEAR 1</u> | | <u>YEAR 2</u> | | <u>TOTAL</u> | | |
|------------|---------------|----------|---------------|----------|--------------|----------|----------|
| | <u>M</u> | <u>F</u> | <u>M</u> | <u>F</u> | <u>M</u> | <u>F</u> | <u>T</u> |
| 17 | 1 | 6 | - | 1 | 1 | 7 | 8 |
| 18 | 12 | 31 | 1 | 16 | 13 | 47 | 60 |
| 19 | 11 | 57 | 7 | 31 | 18 | 88 | 106 |
| 20 | 18 | 59 | 7 | 50 | 25 | 109 | 134 |
| 21 | 11 | 64 | 4 | 52 | 15 | 116 | 131 |
| 22 | 12 | 44 | 9 | 38 | 21 | 82 | 103 |
| 23 | 4 | 43 | 6 | 31 | 10 | 74 | 84 |
| 24 | 5 | 30 | 6 | 40 | 11 | 70 | 81 |
| 25 | 2 | 20 | 8 | 29 | 10 | 49 | 59 |
| OVER 25 | 17 | 78 | 18 | 120 | 35 | 198 | 233 |
| TOTAL | 93 | 432 | 66 | 408 | 159 | 840 | 999 |

Notes:

¹Tlokweg data is 1985 data; other data are from 1984

²Does not include Tlokweg data.

Source: Ministry of Education, 1985

cluster of ages is composed of those students who entered teacher training after completion of the Junior Certificate course. This percentage will decrease as more and more students are drawn from the ranks of untrained serving teachers.

Table 4.3 provides specific data concerning the application standards and admission requirements for the 1985 beginning students. The most recent year's students have slightly lower admission scores at Francistown and Lobatse and slightly higher scores at Serowe. Francistown has suffered a drop of 1.0 in the average admission test score of its new students each of the last four years while the other two older schools have maintained their average. Table 4.3 indicates that, except for Tlokweng, the requirement of a year of service as an untrained teacher is not being applied. At Tlokweng, 141 of 162 beginning students have had experience as serving teachers. The percentages at the other schools range from 40 percent to 50 percent of the beginning students.

The same table also provides data about the academic preparation of the 1985 beginning students. The large number of students with only Standard 7 preparation at Tlokweng reflects the large number of serving teachers in the student body. Lobatse had the largest number of successful JC students, while Tlokweng had both the most COSC and Standard 7 students. It will be instructive to compare the results of Tlokweng students with those from the other institutions if the same admission pattern continues.

The distribution of academic qualifications over the past four years is presented below. If the numbers associated with Tlokweng are subtracted from the data, it appears that the number of COSC students has stayed at last year's level, the number of successful JC students has decreased, the number of unsuccessful JC students and the number of Standard 7 students have increased in the three older schools. They did not, however, revert to the lower 1982/83 levels from which they improved dramatically with the 1984 admission group.

TABLE 4.3
TEST PERFORMANCE AND ACADEMIC PREPARATION
OF PTTC STUDENTS

A. ENTRANCE TEST SCORES BY SUBJECT

| Year | Francistown | | | | Serowe | | | |
|------|-------------|---------|---------|------|--------|---------|---------|------|
| | Math | English | Science | ave | Math | English | Science | ave |
| 1982 | 60.6 | 60.4 | 56.4 | 59.1 | 56.3 | 58.9 | 57.3 | 57.5 |
| 1983 | 61.4 | 60.5 | 53.8 | 58.6 | 58.2 | 57.4 | 57.9 | 57.8 |
| 1984 | 56.9 | 59.5 | 57.1 | 57.1 | 57.6 | 55.9 | 56.3 | 56.6 |
| 1985 | 54.4 | 58.2 | 56.2 | 57.3 | 58.8 | 56.9 | 56.8 | 57.5 |

| Year | Lobatse | | | | Tlokweng | | | |
|------|---------|---------|---------|------|----------|---------|---------|------|
| | Math | English | Science | ave | Math | English | Science | ave |
| 1982 | 58.3 | 57.0 | 55.8 | 57.0 | - | - | - | - |
| 1983 | 59.7 | 58.7 | 59.2 | 59.2 | - | - | - | - |
| 1984 | 58.7 | 58.4 | 57.2 | 58.1 | - | - | - | - |
| 1985 | 57.2 | 58.5 | 59.1 | 58.0 | 56.7 | 59.0 | 54.3 | 56.7 |

Comparison of Aggregate Test Scores

| Year | Francistown | Serowe | Lobatse | Tlokweng |
|------|-------------|--------|---------|----------|
| 1981 | 170 | 163 | 175 | - |
| 1982 | 177 | 170 | 171 | - |
| 1983 | 175.6 | 173.5 | 177.5 | - |
| 1984 | 173.5 | 169.8 | 174.3 | - |
| 1985 | 168.8 | 172.5 | 175 | 170 |

B. ACADEMIC PREPARATION OF 1985 TTC STUDENTS

| Qualification | Francistown | Serowe | Lobatse | Tlokweng |
|--------------------|-------------|--------|---------|----------|
| Cambridge | 12 | 3 | 13 | 27 |
| JC Pass | 109 | 106 | 150 | 74 |
| JC Fail experience | 20 | 25 | 17 | 11 |
| Standard 7 | 23 | 46 | 3 | 50 |

| Sources | Francistown | Serowe | Lobatse | Tlokweng |
|------------------|-------------|--------|---------|----------|
| Serving teachers | 83 | 87 | 70 | 141 |
| Quota | 8 | 16 | 18 | 18 |

Source: Ministry of Education, 1985

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| <u>Qualification</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>Total</u> |
|----------------------|-------------|-------------|-------------|-------------|--------------|
| Cambridge | 25 | 68 | 27 | 55 | 175 |
| JC Pass | 313 | 268 | 415 | 439 | 1435 |
| JC fail experience | 88 | 83 | 46 | 73 | 290 |
| Standard 7 | 50 | 90 | 43 | 122 | 365 |

One deficit frequently reported in reports is the poor English language ability of many students at the PTTCs. All PTTC students have passed examinations in English as part of their earlier schooling but the verbal/oral ability in English covers such a wide range that full understanding and participation in classroom activities is hampered. Even though English is the medium of instruction for the upper standards of the primary school neither the admission testing nor the exit examinations measure verbal/oral ability in English.

Staff. The teaching staff are all classified as "trained." Of the total of 82 tutors, 15 have completed the Advanced Teachers Course, 46 have bachelor's degrees, and 21 have higher degrees. Most of the teachers (60%) are males. Although all of the tutors are formally qualified, some evidence exists that the secondary orientation and experience held by many biases the preparation in the direction of the higher standards and junior secondary education. This matter will be discussed later in this chapter.

The combined student/teacher ratio for the four institutions is approximately 14:1. While the ratio varies somewhat among the four schools, the differences are negligible and all ratios are adequate for instruction and supervision of teaching practice. However, should inservice responsibilities be added to the tutors' job description, the staffing level would not be adequate. The enrolments have increased by more than 20 percent in the past two years -- as a result of the opening of Tlokwenj and the additional students at each of the other three.

Curriculum. The four Primary Teacher Training Colleges have identical educational objectives for the programme, identical syllabuses for those areas tested at the end of the

programme, and similar timetables for students and tutors, but a wide variety of differences within the classroom. Common educational objectives for the two year programmes at the four colleges have been set. One of these relates to understanding the child and another specifies in-class instructional behavior of teachers. The remaining six describe what kind of person the teacher should be and how that teacher should behave in personal, community, and professional situations.

The P TTC graduates should:

- Value and impart the National ideals of democracy, development, self-reliance and unity which are enshrined in the philosophy of Kagisano;
- Value and continue to impart to children their National Culture i.e. language, traditions, songs, ceremonies and customary behaviour;
- Play such a part in community affairs as befits their role as teachers and responsible citizens of Botswana;
- Understand and work towards the objectives of National Educational System;
- Seek to improve the Botswana primary education programme by reviewing and upgrading the content, materials, and instructional methods in cooperation with other teachers;
- Understand the process of child development and the existence of individual differences and be able to provide children with a range of educational experiences that will enable each child to discover and develop his/her own special interest, talents, and skills;
- Be able to select appropriate learning objectives, including both skills and knowledge, and attain them by the use of most effective and suitable teaching methods, learning materials, audio-visual aids and evaluation procedures; and
- Demonstrate a professional attitude as teachers toward their work.

The curriculum of the P TTCs is established by the Faculty of Education of the University of Botswana and is described -- its syllabuses, its examination and moderation procedures, and other limits, controls, and relationships -- in the Primary Teacher Training College Affiliation Handbook, 1984. The described programme is the same for all four schools and consists of Foundation Studies (education and methods) and Current Curriculum Studies (content). The Foundation Studies include Education, English, Setswana, Mathematics, and Science; the Curriculum Studies include the latter four plus Social Studies, Arts and Crafts, Music, Physical Education, Health, Religion, and one or both of Agriculture and/or Woodwork, and Home Economics.

Table 4.4 presents a sample programme from the Lobatse Teacher Training College. Students are in class for eight 55 minute periods each day with most of the classes scheduled to provide 110 minutes of instruction at one time. Where classes are only scheduled for one period (from 3 - 6 times during a week depending on the stream), the "passing time" between the classes comes out of the 55 minutes indicated for instruction. Except for the Education classes, all classes in a field for a stream are taught by the same instructor. In Education, three instructors have been assigned to teach the seven periods of instruction; one for one period, one for two periods, and one for four periods. In the case of Lobatse, the three instructors have divided their assignments according to the syllabus -- one handles the section on Educational Administration, Rules, and Regulations; one handles Education and Socialisation and Child Psychology; and the third (for four periods a week) handles the two methods sections. For some streams, the same instructor will work with the group for two years. For other streams, different instructors will work with the group in the second year.

The programme at Tlokweng differs from this schedule in that Art, Physical Education, and Religion were not offered -- due, in part, to the absence of qualified instructors at the

TABLE 4.4

LOBATSE PRIMARY TEACHER TRAINING COLLEGE

SAMPLE PROGRAMME

| <u>FIRST YEAR</u> | | <u>SECOND YEAR</u> | |
|--------------------|---|--------------------|---|
| Science | 5 units per term | Science | 5 units per term |
| English | 5 units per term | English | 5 units per term |
| Maths | 5 units per term | Maths | 5 units per term |
| Setswana | 4 units per term | Setswana | 4 units per term |
| Social Studies | 4 units per term | Social Studies | 3 units per term |
| Home Economics | 2 Units per term | Home Economics | 2 units per term |
| Agriculture | 2 units per term | Agriculture | 2 units per term |
| Art | 2 units per term | Art | 2 units per term |
| Education | 7 units per term* a)4 units b)2 units c)1 unit | Education | 6 units per term* a)3 units b)2 units c)1 unit |
| Religion | 1 unit per term | Religion | 1 unit per term |
| Physical Education | 1 unit per term | Physical Education | 1 unit per term |
| Tutorial P/Study | 1 Time Period | Tutorial P/Study | 3 Time Periods 1 Time Period |

Teaching Practice:

Year 1 --2nd Term. Three weeks full time in the schools in the Lobatse area. All other classes are cancelled. Each student is paired -- one serving teacher and one non-serving teacher in each pair assigned to one class.

Year 2 --1st Term. Three weeks full time in the schools in the Kanye, Ramotswa, and Lobatse area. Each student is assigned to one classroom. All other classes are cancelled.

--3rd Term. Four weeks full time in the schools of the region. Each student is assigned to one classroom.

Notes:

*The seven units of Education classes are divided by instructor into three separate activities as listed in a), b), & c) above. The content of the separate parts are explained in the narrative.

The syllabuses for the Education, English, Setswana, Mathematics, and Science programmes are included in the appendix of this document.

Source: Ministry of Education, 1985

new school. The programme provided time for study and "scheduled activities" not found in the Lobatse program. Education classes are taught by two instructors in two units of three, in contrast to the Lobatse format. The Lobatse programme is organized around double periods of instruction (110 minute periods as the modal length). The Tlokweng programme only uses double periods for its Agriculture/Home Economics classes and one Science lab.

Teaching practice does not occur in three week blocks during the first four terms as at Lobatse. Instead practical experiences in schools occur weekly for the first five terms. An extended period of teaching practice does occur during the sixth term at Tlokweng just as it does at Lobatse.

At the Francistown PTTC, on the other hand, the programme gives extra emphasis to English and Reading and has reduced hours in Science and Mathematics instruction when compared with Lobatse and Tlokweng. The teaching practice and Education studies format are similar in hours to Lobatse but divide the content responsibility differently. The programme changes for the last part of the term in which students have been doing their teaching practice.

Of course, labels, hours, and instructor assignment do not describe what content is covered in the classes and what teaching skills are emphasized. However, they do verify differences in the instructional approaches within the PTTCs.

In actual practice, the teaching at the PTTCs is not closely coordinated with the syllabus specified by the University. The de facto curriculum is viewed by some educators as largely determined by individual staff members at the PTTCs, many of whom are trained exclusively as subject specialists rather than educational tutors. An examination of the timetables at the four colleges shows that differing time allocations and differing divisions of the syllabuses among instructors and the six terms exist.

Examinations are used for selection into the PTTCs and for certification at the end of the course. The Ministry of

Education Department of Curriculum Development and Evaluation reports three 1982-83 studies of the relationship between scores on the TTC selection examination (1985 results were reported earlier) and scores two years later at the conclusion of training. Correlations between the selection and certification tests were .43 for Francistown, .36 for Lobatse, and .58 for Serowe.

These values represent a meaningful predictive validity for the TTC selection examination, but they also reflect significant opportunity for improving the selection process. The square of those values, for example, is an estimate of common variance between the two examinations. The estimated variance which is common to both tests is .18 for Francistown, .13 for Lobatse, and .34 for Serowe. These data suggest that many characteristics of applicants associated with success on the certification examination are not being measured by the TTC selection examination. Other information in the above reports indicates that the predictive accuracy of the TTC selection examination varies for applicants with different educational levels and experience.

The PTTC examination, as currently graded, has no significant effect on the quality control of students graduating from the PTTCs; for all practical purposes, no students fail this examination. Grades on the examination determine results of certification as follows: Pass with Distinction (70% or above), Pass with Credit (60 - 69%), Pass (50 - 59%), and Fail (49% or below). On the recommendation of the moderators, however, a student who has failed certain parts of the programme can repeat the relevant courses and/or examinations three times. Although complete data are not readily available, indications are that practically all students who complete the two year course eventually become certified as qualified teachers. The distribution of grades for all candidates who took the examination from 1981 to 1984 at the three older PTTCs is found in Table 4.5.

TABLE 4.5

PRIMARY TTCS EXAMINATION SUCCESS, 1981 - 1984

| <u>College</u> | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>Total</u> |
|--------------------|-------------|-------------|-------------|-------------|--------------|
| <u>Francistown</u> | | | | | |
| Distinction | 10 | 10 | 6 | 4 | 30 |
| Credit | 67 | 90 | 83 | 90 | 330 |
| Pass | 19 | 20 | 31 | 22 | 92 |
| Supplement | 17 | 18 | 10 | 15 | 60 |
| <u>Serowe</u> | | | | | |
| Distinction | 5 | 6 | 9 | 6 | 26 |
| Credit | 157 | 167 | 114 | 151 | 589 |
| Pass | 8 | 21 | 20 | 7 | 56 |
| Supplement | 21 | 20 | 12 | 15 | 68 |
| <u>Lobatse</u> | | | | | |
| Distinction | 14 | 13 | 12 | 7 | 46 |
| Credit | 95 | 111 | 102 | 116 | 424 |
| Pass | 17 | 12 | 22 | 17 | 68 |
| Supplement | <u>22</u> | <u>7</u> | <u>18</u> | <u>11</u> | <u>58</u> |
| Totals | 452 | 495 | 439 | 461 | 1847 |

Facilities. Facilities, as reflected in the number of students per classroom, are fairly evenly distributed. The student/classroom ratio is highest at Serowe, 34:1 and, lower at Lobatse, 32:1, and Francistown 31:1. (The ratio of students to classrooms at Tlokweng is only 12:1 but this is expected since it is only in its first year). As was true with the student/teacher ratios, however, all of these appear adequate. The relatively low student/teacher ratios and modest class sizes which were found when the sector assessment was completed in 1983 have increased and will continue to do so as the PTTCs enrol students at capacity levels.

The facilities and equipment of the three PTTCs are generally adequate for the numbers of students presently enrolled. Many of the suggested solutions to problems and difficulties related to facilities in the three older PTTCs were used in the development and construction of the Tlokweng Teacher Training College. While budget limitations forced the reduction and elimination of some of those changes (e.g. a larger library) the Tlokweng facility could easily be used as an exemplar of teacher education facilities.

There are some improvements and modifications that could enhance the effectiveness of the existing facilities. Repairs and improvements are needed, as stated, in the "Report of the Professional Visits to Teacher Training Colleges: Francistown, Serowe, Lobatse - 21-29 March 1983" and in the results of a number of informal visits by Ministry of Education Officers. Most of the facility related recommendations, however, are in the areas of student accommodations and kitchen facilities. In none of the reports have serious deficiencies been cited.

Governance. The governance of Primary Teacher Training Colleges is a complex process. Two boards, two departments at the Ministry, one department at the University, and a variety of other educational administrators control specific functions at the PTTCs.

Each PTTC has a Principal, a deputy, an assistant, and a small but adequate administrative unit. All are employees of

the MOE through the Unified Teaching Service. For matters of administration, the Principal reports to the Chief Education Officer (CEO) for the MOE's Department of Primary and Teacher Training (DPTT). Two education officers in the DPTT are assigned to assist the Principals and the CEO in this process. The selection, admission, curriculum, and examination process of the PTTCs are the prerogatives of the Primary Education Department of the University. In addition, the Dean of Education, the University Registrar, heads of other departments from the University, and the MOE's Deputy Permanent Secretary, several CEOs, and others from the MOE sit on one or both boards.

The Board of Affiliated Institutions is a decision-making body with powers conferred upon it by the University Senate and the Ministry of Education. Its purposes are:

- To coordinate the implementation of preservice and inservice teacher education programmes involving the Ministry of Education and the University,
- To consider recommendations concerning the growth and development of affiliated institutions,
- To decide on matters concerning regulations, syllabuses, assessment procedures and teaching methods;
- To approve the examination results, and
- To receive reports on other matters concerning affiliated institutions.

The Board meets at least twice a year to consider recommendations from the National Council for Teacher Education and to approve the examination results of the institutions.

The members on the Board include the following:

Dean, Faculty of Education (Chairman)
Registrar, University of Botswana (Secretary)
Deputy Vice Chancellor
Chief Education Officer, Primary Teacher Training, MOE
Representative of Chief Education Officers
Coordinator of TTCs (UB)
Subject Moderators (UB)
Heads of the Departments, Faculty of Education
Principals of Affiliated Institutions

The National Council for Teacher Education is responsible for advising on the type of programmes to be introduced for both preservice and inservice teacher education, for advising on teacher education curricula and assessment procedures, and for making recommendations to the Ministry of Education and the Board of Affiliated Institutions. It normally meets twice each year. The representatives on the National Council include the following:

Deputy Permanent Secretary, Ministry of Education
(Chairman)
Director, Unified Teaching Service
In-service Team Leader
Senior Planning Officer, Ministry of Education
Chief Education Officers: CDU, PTT, and Secondary
Regional Educational Officers
Dean, Faculty of Education (UB)
Heads of Department, Faculty of Education (UB)
Director, Institute of Adult Education
Two representatives of Botswana Teachers' Union --
 one from primary and one from secondary
Principals of Affiliated Institutions
One representative of the Headmasters' Association

The roles, objectives, limits, controls, and regulations related to the board, the council, and other relationships are set forth in the University publication, Primary Teacher Training Colleges: Affiliation Handbook 1984.

4.2.3.2 Junior Secondary Teacher Training

Programmes. There are two programmes to prepare junior secondary school teachers. The Diploma in Secondary Education is a three-year programme offered by the Faculty of Education at the University of Botswana. It has been the primary source of Botswana teachers for junior secondary schools. The programme was to have been phased out with the class that began in January, 1985. Recently, a decision was made to continue the Science portion of the programme with a new class scheduled for Fall, 1985. It is being replaced by a new programme of preparation for junior secondary teachers that was started in March, 1985 at the Molepolole College of Education. The MCOE enrolled 165 students who will graduate at the end of 1987 and

begin teaching in January, 1988. Some junior secondary teachers, particularly in five-year government and government-aided secondary schools, were trained in the Postgraduate Diploma in Education programme to be described in a later section.

These programmes are important aspects of teacher education in Botswana since the junior secondary schools have been heavily dependent upon untrained teachers in the Community Junior Secondary Schools (CJSSs) and expatriate teachers throughout the five forms of secondary education. Of the 1156 teachers in 1984, over 36 percent were expatriates and 11 percent were untrained. In the CJSSs, 28 percent were untrained. The capacity of these programmes to handle the proposed expansion of junior secondary education, as well as the capacity of the PTTCs to provide for the projected growth in the primary schools, will be discussed in the supply and demand subsection which follows.

The Diploma in Secondary Education (DSE) is awarded at the successful completion of a three year course. This programme currently has 100 students enrolled in the first year, 77 students in the second, and 70 students in the third.

Students study toward a Diploma in Secondary Education (Humanities) or a Diploma in Secondary Education (Science) depending on their choice of teaching fields. In Humanities, students may elect to study English, Geography, History, Religion, or Setswana. In Science or Maths students either enroll in a Science programme (that includes Biology, Chemistry, Physics and Astronomy) or a Mathematics programme. Historically, there have been almost twice as many students electing the Humanities option over the Science/Maths option. In the group which began in 1985, however, more students (54) elected the Science/Math option than elected Humanities (46).

In order for students to be admitted to the DSE programme they must have completed the senior secondary school programme with at least a Division III Cambridge Overseas Certificate and at least a GCE in the teaching fields. The first year of the

DSE is spent taking courses in the appropriate department at the University of Botswana. The students enrol in the same courses that a beginning degree-seeking student pursues. In addition, the students participate in an introductory educational psychology course.

The second and third year are divided between work in the teaching fields and Education courses, as outlined in Table 4.6. The student body in the DSE program is 61 percent male. Included are four South Africans, two students from Lesotho, and one student from Malawi.

In March, 1985, the Molepolole College of Education began its first term (an abbreviated 6 weeks term) with 165 students and 12 faculty members. Its three year programme of preparation is slated to become the primary source of Batswana teachers for the junior secondary schools. The student body is made up of 91 males and 74 females with representation from each of the districts in the country. Table 4.7 presents data on the MCOE student population for 1985.

The MCOE students are older and have more classroom experience than those who attend the four PTTCs. Twenty-four MCOE students have had extensive primary school teaching experience; sixty-three have had two or more years of teaching experience as untrained teachers in the community junior secondary schools; and an additional 48 have had up to two years of teaching experience -- many as Tirelo Setshaba volunteers. Fewer than 30 of the students have had no prior teaching experience.

The current instructional staff has three Batswana -- the Dean of Students and lecturers in English and Setswana. The expatriate staff has been drawn from Canada, the United Kingdom, Sierre Leone, Holland, Ireland, and the United States. The staff will double by the end of 1985 and more than triple its current size when it reaches its full complement. Six new staff members will join the staff during the second term of the current academic year.

TABLE 4.6

DIPLOMA IN SECONDARY EDUCATION
SAMPLE PROGRAMME

Arts Option

YEARS 2 & 3

- 1) 2 Courses from each of 2 Fields chosen from:
English Geography Religion
Setswana History
- 2) 2 Courses (Methods & Curriculum) in areas corresponding to the chosen fields in #1) above:
Theory & Practice of English as a Second Language
Theory & Practice of Teaching Geography
Theory & Practice of Teaching History
Theory & Practice of Religious Education
Theory & Practice of Teaching Setswana

Science Option

YEARS 2 & 3

TYPE I - SCIENCE

Year 2

BIOLOGY
CHEMISTRY
PHYSICS
CURRICULUM STUDIES

Year 3

2 OF THE FOLLOWING
BIOLOGY CHEMISTRY
PHYSICS
ASTRONOMY & SCIENCE
& SOCIETY
CURRICULUM STUDIES
INDEPENDENT STUDY

TYPE II - MATHEMATICS

Year 2

Mathematics
Further Mathematics
Theory & Practice of Teaching
1 Full Year Elective

Year 3

Mathematics
Further Mathematics
Math & Society
Curriculum Studies
Independent Study
1 1-Semester Course

BOTH OPTIONS

Year 2

Human Development
Measurement & Evaluation
Communication & Technology

Year 3

Guidance & Counseling
Philosophy of Education
Educational
Administration

TABLE 4.7
CHARACTERISTICS OF THE MCOE STUDENT POPULATION

A. AGE AND SEX OF STUDENTS

| <u>AGE</u> | <u>SEX</u> | |
|------------|-------------|---------------|
| | <u>Male</u> | <u>Female</u> |
| 18 | 2 | 7 |
| 19 | 3 | 15 |
| 20 | 13 | 8 |
| 21 | 9 | 12 |
| 22 | 14 | 2 |
| 23 | 17 | 2 |
| 24+ | <u>33</u> | <u>28</u> |
| TOTAL | 91 | 74 |

B. Student Population
By District

| <u>DISTRICT</u> | <u>SEX</u> | |
|-----------------|-------------|---------------|
| | <u>Male</u> | <u>Female</u> |
| NORTHEAST | 5 | 7 |
| CENTRAL | 36 | 27 |
| KGATLENG | 2 | 7 |
| KWENENG | 11 | 11 |
| SOUTHERN | 19 | 12 |
| SOUTHEAST | 1 | 2 |
| KGALAGADI | 2 | 2 |
| GHANZI | 1 | 0 |
| NORTHWEST | 5 | 1 |
| LOBATSE | 0 | 1 |
| FRANCISTOWN | 1 | 0 |
| OTHER | <u>8</u> | <u>4</u> |
| TOTALS | 91 | 74 |

Source: Molepole College of Education, 1985

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Teacher supply projections to be discussed later in this chapter assume that the MCOE will produce 150 teachers per year beginning with the 1988 school year. These projections further assume that twice as many students will choose to major in Science/Maths than in Arts. Student choices of majors (each student has two major subjects at MCOE) are listed below:

| | | | |
|----------------|----|----------------|----|
| Science | 43 | Mathematics | 37 |
| English | 82 | Setswana | 68 |
| Social Studies | 66 | Home Economics | 34 |

These statistics indicate that the current ratio is, in fact, reversed with many more students choosing Arts subjects than choosing Science or Maths. It was, in part, this phenomenon that caused the University to decide to continue its Science option within the Diploma in Secondary Education program. The MOE is confident that with improved selection and counseling procedures the ratio of Arts to Science/Maths students in future MCOE cohorts will approximate the original goals of the institution.

Each student at MCOE chooses to study two major fields and two minor fields. The student choices of minor fields are listed below:

| | | | |
|----------------|----|----------------|----|
| Science | 68 | Mathematics | 40 |
| English | 70 | Setswana | 64 |
| Social Studies | 53 | Home Economics | 36 |

The students attend classes in their two major fields of study for seven hours per field per week. It is expected that by the end of the three years each student will have achieved a level of knowledge equivalent to completion of one year of higher education.

The students attend classes in their two minor fields of study each for two hours per week. It is expected that by the

end of the three years each student will have achieved a level of knowledge equivalent to that at the end of Form IV.

At the present time, course descriptions, syllabuses, and three year programmes of study do not exist at the MOE. Current staff are working individually and in subject groups to decide upon the nature of individual courses and the three year programme in each subject area. Collectively, the faculty is also working with the administration to describe the total three year programme. Course syllabuses and the complete programme of studies are scheduled to be ready for review and approval by August, 1985.

In broad outline, the programme of study will require the following:

- a) Two major fields -- students will take 17 hours of classes in each (7 + 5 + 5) in the three years.
- b) Two minor fields -- students will take 2 hours of classes in each field each of three years.
- c) Education Studies -- students will take 5 hours of classes each year.
- d) Optional Studies -- students will elect classes in arts and practical subjects.
- e) Teaching Practice -- students will have school experiences each term, short periods of teaching practice each year, and a block Teaching Practice during the last term.

Both the process being followed in developing the programme and its broad outline were initiated by Advice on Curriculum Development: Junior Secondary Schools and Secondary School Teacher Training College, written in 1981 for the Ministry of Education by the current MCOE Principal.

Governance of teacher education at the junior secondary level is dichotomous -- the diploma programme being governed in one way and the MCOE programme being governed in another. The diploma programme at UB is a university programme controlled according to established policies at the University. The MCOE programme is new and, up to its opening term, had been under

the direction of the Ministry of Education, Department of Secondary Education. Meetings are currently underway to define the relationships among MCOE, the University, and the Ministry. It is quite likely that the relationship between MCOE and the University will be similar to that between the PTTCs and UB. Proposals suggesting different relationships have been put forth and negotiations will follow.

4.2.3.3 Senior Secondary Teacher Training.

Teachers for the senior secondary schools of Botswana are trained through one of three existing programmes at the University of Botswana or, if in the fields of Agriculture, Home Economics, or technical subjects, through programmes in Swaziland or at the Botswana Polytechnic. The programmes at the University include a Certificate in Science and Mathematics (14 students), and a Postgraduate Diploma in Education (48 students). A new B. Ed. in Science programme has the approval of the appropriate University bodies but will not begin with its first class in Science until the 1985-86 school year.

The Certificate Programme in Science and Mathematics is a special inservice program to assist in retraining successful Humanities teachers in one of the Science fields. As yet, no one has used it to retrain in Mathematics, although that is an available option. This programme is a 33 week inservice course -- three nine week terms and two three week periods of teaching practice between May and December. One of the admission requirements is that each student has to have had success in Science subjects on the COSC.

The 1984 students had a pre-test score of 67 percent on 33 questions from the 1983 JC Integrated Science Examination and a post-test score of 84 percent on the same items 33 weeks later. Six of the completers were posted to CJSSs and the remainder went to Government schools. Eight were placed in schools other than the one they left; the remainder returned to their original schools.

The Postgraduate Diploma in Education is a one year programme leading to a diploma in Education for those students

who have completed a degree, have had work in two teaching subjects, and want to become secondary school teachers. The programme consists of eight one semester courses in Educational Foundations and two courses of two semesters each in Curriculum Studies for Humanities majors or two courses of two semesters each in either Mathematics or Science for specialists in Science/Maths.

The eight courses in Educational Foundations include work in Developmental Psychology, Psychology of Learning, Guidance and Counseling, Educational Measurement and Statistics, Social and Philosophical Foundations, Educational Planning and Administration, General Methods, and Curriculum Theory/Design. In addition, students complete a teaching practice requirement for six weeks during their holidays.

The courses in Humanities are selected from two of the following fields -- English as a Second Language, Geography, History, Religious Education, and Setswana. The courses in Science include work in theory and practice of teaching science and advanced topics in the field. The students in Mathematics take two courses -- Theory and Practice of Teaching Mathematics and Psychology and Philosophy of Mathematics Education.

All teacher education programmes at UB are governed in the same manner as all other degree programmes with the same degree, certificate, or diploma status. Unlike the programmes at the PTTCs or Molepolole, no external agency verifies the quality of the programme, the product, or the teaching practice. External examiners do verify the quality of the examination process.

4.2.3.4 Inservice Teacher Education. Inservice teacher education is delivered by educators from schools, from regional education offices, from educational centres, from the Ministry of Education in local and regional meetings, from the MOE in national settings, from PEIP, from the PTTCs, from UB, from donor agencies, and a variety of other sources. The programmes delivered were described as:

EITHER:

OR

- less than a day in length
- curriculum review focus
- content related
- helping to understand children
- having teacher participants
- as long as four weeks
- teaching behavior focus
- method related
- helping to make teaching aids
- having other participants

In summary, they are as varied and as responsive as the over 7,000 teachers in Botswana might need.

Data on inservice teacher education are meager. The last extensive collection of inservice data was the Primary Education Survey in 1982. Individual inservice providers, such as PEIP, have collected statistical and evaluative data but no country-wide data base exists. The information provided in this subsection was obtained from interviews conducted with representatives of the groups listed in the first paragraph of this subsection as well as teachers, headteachers/masters, university personnel, and Ministry of Education officials.

Individual Education Officers conduct inservice programs in their respective districts (Department of Primary and Teacher Training), in regional and national meetings (Department of Secondary Education), for dissemination and development purposes (Department of Curriculum Development and Evaluation - CD&E), and for all of the above reasons (Department of Technical Subjects). These inservice programmes are in addition to their inspection duties and their other assignments within the Ministry. Such courses are held after school hours, on weekends, during school holidays, etc. During the last year, both the secondary and the CD&E inservice activities have been heavily weighted in favor of using the assembled participants to assist in the curriculum revision and dissemination process.

Education Centre workshops are held in centres at Kang (Matsha), Lobatse, Molepolole, Mochudi, Serowe, Mahalapye, and

Maun. The major focus of such workshops has been at the primary level. The success and use of these centres and inservice workshops varies considerably from site to site as demonstrated in a recent visitation report. "It is almost false to say we have a center in Mochudi...(it) is not accessible...the room is (so) packed...no workshop could be held in that room..." While "the centre (Serowe) is kept ...busy by a number of workshops and seminars ... too many to name in this report. (In addition), the centre officer visits the schools to conduct workshops and ...teachers come to the centre..." Each centre is located on the facilities of another agency -- a PTTC, a museum, an old school, a non-formal education center, etc. The staff of each center, an administrator and a deputy, are dependent on the administrator of the host institution for hostels, space, and other necessities.

This situation is scheduled to be remedied as part of PEIP II and JSEIP when nine new and separate Education Centres will be built complete with hostels for in-service participants. At the end of the construction period, an Education Centre will be operational in each district of the country.

The only statistics systematically collected about inservice activities are those available through PEIP. It is typical that the various inservice providers register attendance and keep such records but no central collection and dissemination of such data exists within the Ministry of Education.

The data collected on in-service participation in the Primary Education Survey, 1982, was reported in the sector assessment and is replicated below in Table 4.8. Indications from interviews in 1985 are that the situation has not changed significantly since then except for the PEIP data presented below.

TABLE 4.8

ESTIMATE OF IN-SERVICE PARTICIPATION, 1982

| Days of Participation | Number | | | | | | Percentage | | | | | |
|-----------------------|-----------------------------|----------|-------------------------------|----------------------------------|----------|----------|-----------------------------|------------|-------------------------------|----------------------------------|------------|------------|
| | Curriculum Development Unit | TAPU | Education Officer - at School | Education Officer - at Ed. Cent. | PEIP | Other | Curriculum Development Unit | TAPU | Education Officer - at School | Education Officer - at Ed. Cent. | PEIP | Other |
| 0 | 657 | 673 | 561 | 693 | 572 | 694 | 86.9 | 89.0 | 74.2 | 91.7 | 75.7 | 91.8 |
| 1 | 37 | 19 | 67 | 27 | 5 | 20 | 4.9 | 2.5 | 8.9 | 3.6 | 0.7 | 2.6 |
| 2 | 8 | 3 | 49 | 8 | 14 | 5 | 1.1 | 0.4 | 6.5 | 1.1 | 1.9 | 0.7 |
| 3 | 7 | 4 | 30 | 10 | 14 | 8 | 0.9 | 0.5 | 4.0 | 1.3 | 1.9 | 1.1 |
| 4 | 11 | 13 | 15 | 2 | 40 | 0 | 1.5 | 1.7 | 2.0 | 0.3 | 5.3 | 0.0 |
| 5 | 23 | 39 | 13 | 8 | 20 | 20 | 3.0 | 5.2 | 1.7 | 1.1 | 2.4 | 2.6 |
| 6 | 1 | 1 | 5 | 0 | 30 | 6 | 0.1 | 0.1 | 0.7 | 0.0 | 4.0 | 0.8 |
| 7 | 1 | 2 | 7 | 1 | 2 | 0 | 0.1 | 0.3 | 0.9 | 0.1 | 0.3 | 0.0 |
| 8 | 1 | 0 | 0 | 1 | 9 | 0 | 0.1 | 0.0 | 0.0 | 0.1 | 1.2 | 0.0 |
| 9 | 0 | 0 | 0 | 2 | 5 | 0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.7 | 0.0 |
| 10 | 4 | 0 | 4 | 0 | 11 | 1 | 0.5 | 0.0 | 0.5 | 0.0 | 1.5 | 0.1 |
| 11-15 | 3 | 0 | 2 | 2 | 22 | 1 | 0.4 | 0.0 | 0.3 | 0.3 | 2.9 | 0.1 |
| 16-20 | 1 | 0 | 0 | 0 | 3 | 1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 |
| 21-25 | 0 | 0 | 1 | 0 | 4 | 0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.5 | 0.0 |
| 26-30 | 0 | 0 | 0 | 0 | 3 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 |
| Omits | <u>2</u> | <u>2</u> | <u>2</u> | <u>2</u> | <u>2</u> | <u>0</u> | <u>0.3</u> | <u>0.3</u> | <u>0.3</u> | <u>0.3</u> | <u>0.3</u> | <u>0.0</u> |
| TOTAL | 756 | 756 | 756 | 756 | 756 | 756 | 99.9 | 100.0 | 100.1 | 100.2 | 100.1 | 99.9 |

Source: Primary Education Survey - 1982, preliminary analysis, MOE.

In the survey, when 60 head teachers were asked: "Have you or any of your teachers had inservice workshops provided for you this year?", the following responses were given:

| | | | |
|-----|---------|-----|------------------------------|
| 40% | -- TAPU | 30% | --Education Officer (school) |
| 27% | -- PEIP | 25% | --Education Centre |
| 25% | -- CDU | 10% | -- Other |

These responses represent the number of schools not the number of participants.

The degree of participation was examined by a question answered by 754 of the 756 teachers in the 60 schools: "How many days of workshops have you had this year from each of the following?" Responses were requested for the same six categories. The responses are indicated in Table 4.8.

These data indicate a relatively low participation rate for the sample. They are not accurate for 1985 for the 128+ schools that have participated in the PEIP workshop series nor for the secondary teachers who have participated in the curricular review and revision efforts.

The Primary Education Improvement Project (PEIP) has been extensively involved not only in the delivery of inservice education at the primary level but also in attempts to build a delivery system and develop trainers for the inservice needs of Botswana. After trying several models of inservice delivery and institutionalization, PEIP staff, in 1984, began to utilize an inservice training model which was designed to multiply its effect for teachers in 180 primary schools.

A second phase of the PEIP inservice activities began in May, 1984 following two years of initial efforts. The first phase provided workshops for 30 schools which were willing to commit themselves to conduct workshops for 30 other schools within their area. The schools were represented by deputies, head teachers, and senior teachers. The attendance and replication patterns of the workshop participants was marked with such great variability that formative evaluations of the process were difficult.

Phase II was designed to establish greater consistency in the inservice process and to standardize the replication of the workshops in a specific number of schools. Thirty pairs of schools (60 in all) in each of three areas of the country were identified by appropriate Education Officers. Schools were selected for their ability to profit from the process; their likelihood of replicating the workshops in their own schools and in the paired schools with professional integrity; and the proximity of the two schools. Participants were selected based on their willingness to commit to the time necessary. The head teacher had to be one of three team members but the school and Education Officer were free to select others regardless of rank.

The two schools in each pair send representatives to every other workshop and replicate that workshop within their own school and at the other school. Each school receives the content of 12 workshops in one year -- half from the PEIP staff; the other half from the personnel at the paired school. A variety of demographic and evaluative data were collected about the participants in the last year.

The PEIP staff also worked to collect and use evaluative data to assess the effectiveness of the 12 workshops. Objective tests of participant learning were developed and used in post-test settings during workshops conducted by PEIP staff and personnel from the paired schools. Thus, a more objective measure of the slippage between achievement from PEIP workshops and that from the paired workshops became available.

The data available from Fall, 1984 workshops are listed in Table 4.9. In each instance, some slippage existed between the two workshops but not to a level of statistical significance.

4.3 ANALYSIS

Each of the programme areas for which data were presented in the earlier sections of this chapter will now be discussed from an issue/analysis perspective. This will include a discussion of the five thematic areas used in the sector assessment as common points of reference.

TABLE 4.9

Test Performance of Participants
Taught by PEIP Team or Sister School

| Workshop | Region | School | Taught By | N | Test Mean | sd | t |
|-----------------------------|---------|--------|--------------|----|--------------|------|-------|
| Reading (157 schools) | North | A | PEIP | 29 | 9.70 | 4.95 | 1.016 |
| | | B | A | 27 | 7.04 | 3.86 | |
| | South | B | PEIP | 30 | 7.50 | 1.57 | |
| | | A | B | 33 | 6.88 | 1.14 | |
| | Central | A | PEIP | 28 | 13.39 | 3.35 | |
| Math (123 schools) | South | A | PEIP | 29 | 12.60 | .85 | .672 |
| | | B | A | 29 | 10.20 | 2.20 | |
| | Central | B | PEIP | 20 | 12.80 | .90 | |
| | | A | B | 21 | 11.81 | 1.00 | |
| | North | A | PEIP | 24 | 11.42 | 1.00 | |
| English (128 schools) | Central | A | PEIP | 26 | 12.00 | 2.90 | .728 |
| | | B | A | 27 | 9.70 | 3.00 | |
| | North | B | PEIP | 26 | 12.60 | 3.40 | |
| | | A | B | 19 | 8.42 | 1.04 | |
| | South | A | PEIP | 30 | 11.20 | 1.05 | |

4.3.1 Teacher Supply and Demand

Of special attention during this period of expansion and improvement of the primary and secondary programmes in the schools of Botswana is the ability of the teacher training programmes to meet the demands for increased and better trained school teachers. This topic is of even more significance due to the number of unqualified teachers currently in the system, the ever-increasing number of children in school, and the involvement of expatriates on time-specific contracts.

The projections of teacher supply and demand which have been estimated for 1985 - 1989 are based on the projection of enrolments in the schools and teacher training institutions.

The following assumptions have been used to estimate new teacher requirements:

| | |
|----------------------------|--|
| Primary Education | Student/teacher ratio of 32.4:1 |
| Junior Secondary Education | Student/teacher ratio of 26.7:1 (40 students per class, 1.5 teachers per class) |
| Senior Secondary Education | Student/teacher ratio of 20:1 (30 students per class, 1.5 teachers per class) |

4.3.1.1 Primary education. For primary education, the 1982 teacher corps consisted of 5,770 teachers of whom approximately 65 percent were classified as "qualified" by Ministry of Education standards. This total number of teachers is only five fewer than would have been projected for 1982 on the basis of the Ministry of Finance and Development Planning forecasts. The "teacher requirement" data indicated below assume that untrained primary teachers presently in service are not replaced. However, as trained teachers enter the profession, the proportion of the total represented by untrained teachers will continue to decline.

PRIMARY TEACHER DEMAND
1985 - 1989

| PRIMARY EDUCATION | 1985 | 1986 | 1987 | 1988 | 1989 |
|-------------------|---------|---------|---------|---------|---------|
| NO. OF STUDENTS | 220,401 | 229,116 | 239,325 | 250,310 | 260,910 |
| INCREASE | 10,629 | 8,715 | 10,209 | 10,985 | 10,600 |
| TEACHERS NEEDED | 6,803 | 7,072 | 7,387 | 7,726 | 8,053 |
| INCREASE | 7 | 269 | 315 | 339 | 327 |

If teacher attrition was not a problem, the four teacher training colleges and the UB Diploma programme could provide adequate numbers of trained teachers to maintain current student/teacher ratios for the next several years and increase the proportion of qualified teachers in the schools. The three PTTCs produce about 500 graduates per year and, starting with the 1987 school year, Tlokweng will produce an additional 150 graduates per year. Given the number of untrained primary teachers currently in the system (1,800), the current training capacity would replace the untrained teachers in six years except for replacement/turnover demands. Given that the quality of instruction at the primary level is in need of improvement, as discussed in the original sector assessment, the choice is to increase the present preservice training capacity on a short-term basis or to bolster the inservice training of the underqualified teachers.

4.3.1.2 Secondary Education. The situation at the secondary level is complicated by the percentage of expatriates, by the training required in specific subject matter areas, and by the current assignment situation in the schools. Using the 1.5 teachers for every class formula presented above, Table 4.10 shows the minimum staffing requirements and actual staffing position of secondary schools in April, 1985. The minimum staff needed at that time was 1282 but the actual staff employed was 1310 teachers. The difference reflects the wider offerings and smaller classes at some schools.

TABLE 4.10

SECONDARY SCHOOL STAFFING -- APRIL 1985

| TEACHERS April 1985 | TOTAL STAFF | Minimum Staff Need | Ex- patriates | Unquali- fied Teachers | Board Paid Teachers |
|------------------------|----------------|--------------------------|------------------|------------------------------|---------------------------|
| CJSS | 434 | 429 | 169 | 106 | 49 |
| Govt & aided | 876 | 853 | 328 | 74 | 0 |
| TOTAL | 1310 | 1282 | 497 | 180 | 49 |

Government and Aided

| School | TOTAL STAFF | Minimum Staff | Ex- patriates | Unquali- fied |
|-----------------|----------------|------------------|------------------|------------------|
| 1 Francistown | 25 | 25 | 9 | 2 |
| 2 G S S | 53 | 55 | 26 | 5 |
| 3 Kagiso | 28 | 27 | 4 | 4 |
| 4 Kgari Sechele | 46 | 45 | 12 | 5 |
| 5 Letlhakane | 28 | 27 | 9 | 5 |
| 6 Lobatse | 56 | 52 | 23 | 5 |
| 7 Lotsane | 36 | 34 | 21 | 0 |
| 8 Madiba | 35 | 34 | 16 | 3 |
| 9 Mater Spei | 53 | 48 | 21 | 6 |
| 10 Matsha | 22 | 18 | 10 | 4 |
| 11 Matshekge | 30 | 27 | 4 | 5 |
| 12 Maun | 38 | 36 | 14 | 3 |
| 13 Moeding | 37 | 36 | 19 | 0 |
| 14 Moeng | 30 | 28 | 13 | 0 |
| 15 Molefi | 50 | 51 | 16 | 4 |
| 16 Moshupa | 31 | 27 | 6 | 3 |
| 17 Naledi | 27 | 25 | 10 | 0 |
| 18 St. Josephs | 33 | 34 | 12 | 3 |
| 19 Seepapitso | 46 | 48 | 15 | 2 |
| 20 S-Phikwe | 39 | 37 | 18 | 5 |
| 21 Shashe | 44 | 51 | 16 | 4 |
| 22 Swaneng | 58 | 60 | 22 | 4 |
| 23 Tutume | 31 | 34 | 12 | 2 |
| TOTAL | 876 | 859 | 328 | 74 |

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TABLE 4.10, continued

Secondary School Staffing - April, 1985
CJSS

| School | TOTAL STAFF | Minimum Staff | Ex- patriates | Unquali- fied | Board Paid |
|-----------------|----------------|------------------|------------------|------------------|---------------|
| 1 Baratani | 9 | 9 | 1 | 2 | 0 |
| 2 Batanani | 6 | 6 | 0 | 3 | 0 |
| 3 Bobonong | 17 | 18 | 10 | 2 | 4 |
| 4 Boipelego | 18 | 19 | 7 | 4 | 3 |
| 5 Chobe | 4 | 4 | 2 | 1 | 0 |
| 6 Ipelegeng | 18 | 15 | 6 | 6 | 5 |
| 7 Itekeng | 14 | 15 | 6 | 1 | 2 |
| 8 Itireleng | 18 | 19 | 4 | 3 | 5 |
| 9 Kgamanyane | 8 | 8 | 3 | 3 | 0 |
| 10 Lehutshelo | 6 | 6 | 6 | 0 | 0 |
| 11 Lerala | 7 | 6 | 3 | 2 | 0 |
| 12 Linchwe | 14 | 15 | 3 | 0 | 1 |
| 13 Madikwe | 4 | 4 | 2 | 0 | 0 |
| 14 Mahalapye | 23 | 24 | 8 | 6 | 6 |
| 15 Makolojane | 12 | 12 | 7 | 3 | 0 |
| 16 Makome Hill | 6 | 6 | 4 | 1 | 0 |
| 17 Marang | 19 | 18 | 7 | 7 | 0 |
| 18 Mathiba | 12 | 9 | 2 | 5 | 0 |
| 19 Matlala | 15 | 13 | 7 | 2 | 1 |
| 20 Maun CJSS | 10 | 13 | 3 | 5 | 2 |
| 21 Maunatjala | 7 | 6 | 4 | 3 | 0 |
| 22 Meepong | 11 | 12 | 6 | 0 | 0 |
| 23 Mmanaana | 17 | 15 | 3 | 9 | 3 |
| 24 Molopo River | 7 | 6 | 3 | 3 | 0 |
| 25 Montshiwa | 4 | 6 | 2 | 1 | 0 |
| 26 Ngwaketse | 13 | 13 | 6 | 0 | 0 |
| 27 J. Nswazwi | 12 | 13 | 3 | 2 | 0 |
| 28 Okavango | 13 | 13 | 5 | 4 | 0 |
| 29 Palepyo | 17 | 16 | 9 | 6 | 5 |
| 30 Farwe | 10 | 11 | 5 | 3 | 0 |
| 31 Pelaelo | 4 | 4 | 3 | 0 | 0 |
| 32 Rakops | 6 | 6 | 4 | 2 | 0 |
| 33 Ramotswa | 14 | 13 | 7 | 1 | 6 |
| 34 Setlalekgosi | 15 | 16 | 2 | 6 | 6 |
| 35 Shoshong | 9 | 7 | 4 | 5 | 0 |
| 36 Thamaga | 12 | 12 | 5 | 3 | 0 |
| 37 Tshabong | 4 | 4 | 2 | 1 | 0 |
| 38 Tshegetsang | 15 | 18 | 5 | 0 | 0 |
| 39 Zwenshambe | 4 | 4 | 0 | 1 | 0 |
| TOTAL | 434 | 434 | 169 | 106 | 49 |

Source: Ministry of Education, 1985

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Since the University and public school academic years have not yet been adjusted to operate on the same calendar, the staffing picture changes during each year following the influx of the new university graduates. The November, 1984 staffing analysis showed an increase of 36 teachers in the CJSSs and 50 in the government and government-aided schools. Due to the release of untrained teachers, the departure of expatriates, and the changes in enrolment, there was a net decrease in staff of 5 teachers in the CJSSs and a net increase of 10 teachers in the other schools.

Table 4.11, first presents estimates of the subject-by-subject expansion demand for teachers for the 1985-86 period and then estimates of the replacement plus expansion demand by broad subject area for the same period. The data in Part A of the table indicate that the expansion demand will be considerably higher for Arts (English, Social Studies, and Setswana) than for Maths/Sciences or Practical Subjects. This, in part, reflects the current shortage of Setswana teachers and the increase in the period allocation to English and Setswana recommended in the new curriculum. The data in Part B of the Table suggests that the demand for secondary teachers created by teacher attrition is greater than that stemming from expansion. The assumption underlying the forecast is an attrition rate of 12 percent for expatriates, 8 percent for unqualified Batswana, and 40 percent for unqualified Batswana. The project deficits in Maths/Science and the Arts are almost equal over the five year period. While it is fairly easy to forecast expansion related demand, forecasting attrition related demand is more difficult. The estimates presented in Part B, therefore, should be considered as tentative, particularly for the outlying years.

Table 4.12 presents the supply of Batswana teachers for 1986-1990 and a summary of the imbalances between the supply

TABLE 4.11

A. EXPANSION DEMAND FOR SECONDARY TEACHERS 1986 - 1990

| | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> | <u>Total</u> |
|-----------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Maths | 21 | 10 | 28 | 8 | 21 | 88 |
| Science | 28 | 11 | 36 | 34 | 33 | 142 |
| English | 36 | 17 | 48 | 33 | 33 | 167 |
| Setswana | 12 | 13 | 34 | 10 | 21 | 90 |
| Social Studies | 36 | 15 | 16 | 17 | 55 | 139 |
| Agriculture | 16 | 14 | 2 | 10 | 28 | 70 |
| Home Econ. | 3 | 3 | 25 | 13 | 26 | 70 |
| WW/TD | 1 | 4 | 23 | 9 | 19 | 56 |
| <hr/> | | | | | | |
| Maths/Science | 49 | 21 | 64 | 42 | 54 | 230 |
| Arts | 84 | 45 | 98 | 60 | 109 | 396 |
| Practical Subj. | 20 | 21 | 50 | 32 | 73 | 196 |
| <hr/> | | | | | | |
| TOTAL | 153 | 87 | 212 | 134 | 236 | 822 |

B. REPLACEMENT PLUS EXPANSION DEMAND FOR SECONDARY TEACHERS
1986-1990

| | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> | <u>Total</u> |
|-----------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Maths/Science | 100 | 75 | 124 | 107 | 124 | 530 |
| Arts | 159 | 124 | 186 | 154 | 213 | 837 |
| Practical Subjects | 46 | 49 | 82 | 67 | 115 | 359 |
| <hr/> | | | | | | |
| TOTAL | 305 | 248 | 392 | 328 | 452 | 1726 |

Note: Practical Subjects defined as Agriculture, Home Economics, Woodwork and Technical Drawing.

Source: Ministry of Education, 1985

TABLE 4.12

A. SUPPLY OF BATSWANA TEACHERS 1986 - 1990

| | 1986 | 1987 | 1988 | 1989 | 1990 | Total |
|----------------------------|------|------|------|------|------|-------|
| <u>Molepolole</u> | | | | | | |
| Math/Science | 0 | 0 | 40 | 40 | 40 | 120 |
| Arts | 0 | 0 | 80 | 80 | 80 | 240 |
| Practical Subjects | 0 | 0 | 10 | 10 | 10 | 30 |
| <u>University</u> | | | | | | |
| Maths/Science | 58 | 69 | 53 | 49 | 35 | 264 |
| Arts | 74 | 84 | 47 | 50 | 38 | 293 |
| <u>Polytechnic/Luyengo</u> | | | | | | |
| Practical Subjects | 24 | 31 | 37 | 37 | 37 | 166 |
| Maths/Science | 58 | 69 | 93 | 89 | 75 | 384 |
| Arts | 74 | 84 | 127 | 130 | 118 | 533 |
| Practical Subjects | 24 | 31 | 47 | 47 | 47 | 196 |
| Total | 156 | 184 | 267 | 266 | 240 | 1113 |

B. BATSWANA TEACHER SUPPLY AND DEMAND 1986-1990

| | Maths/ Science | Arts | Practical Subjects | Total |
|------|-------------------|------|-----------------------|-------|
| 1986 | -42 | -85 | -22 | -149 |
| 1987 | - 6 | -40 | -17 | - 63 |
| 1988 | -31 | -59 | -35 | -125 |
| 1989 | -18 | -24 | -20 | - 62 |
| 1990 | -49 | -95 | -68 | -212 |

Source: Ministry of Education, 1985

and demand of Batswana teachers for the same period. The data indicate that the NDP VI target for 1990 of having two-thirds of the teachers in-post qualified Batswana, one-fourth expatriate, and fewer than one in twelve unqualified will be difficult to reach. The deficit may well require either a greater percentage of expatriate or unqualified teachers or both.

4.3.2 Preservice Teacher Education

4.3.2.1 Primary Teacher Training Colleges. The four PTTCs offer programmes of study which are similar in course titles and the course syllabuses but are different in substance due to the background of the instructors, the amount of time devoted to a course, the format for instruction, the nature and sequence of teaching practice, and the specific instructional goals. As a result each PTTC has developed its own individual institutional personality. As a result, teachers who are the product of one are quite likely to be different from teachers who are the product of another. The only measure of comparison that now exists are the scores on the examinations given at the end of the two year program.

These differences are healthy and productive if they are known, evaluated, and used both for program improvement and building a diverse national cadre of teachers. Just what are the differences? Does the Science programme at one PTTC, for example, that requires only four class hours per week for two years produce the same quality as the one at a PTTC that requires six class hours per week? Or, what are the differences between a Mathematics teacher taught by an expatriate with secondary experience and one taught by a Batswana with the same level of university preparation and primary experience. What feedback can head teachers who have supervised graduates of all these PTTCs provide us? What goals are common to all PTTCs -- not stated goals but "achieved goals?"

Educators in Botswana are, in general, pleased with the graduates of the PTTCs. It is time, now, to begin the process of "fine-tuning" the PTTC programmes. One aspect that needs improvement is the admissions process -- meetings are currently in session to examine this area. Another that deserves attention is the diversity of views of each faculty as to what characteristics the "ideal teacher" ought to have. Again, the existence of diversity is positive as long as it is used to build a stronger program.

4.3.2.2 Molepolole College of Education. The structure and content of the curriculum for the MCOE is still under discussion. The merits of a modular team-teaching approach outlined in F.A. Cammaert's "Advice on Curriculum Development", referred to earlier, and a more traditional contained classroom approach are being weighed at the College and at the MOE. Since research suggests teachers teach the way they are taught, the debate is significant in its own right. The broader questions of curriculum content and program goals are not at issue. The intent that course content be closely informed by a strong grounding in educational theory and methodology as well as the practical needs of those who will finish their formal schooling when they graduate from a CJSS is shared. Close specification of the syllabus and appropriate testing and assessment mechanisms await, of course, solution to the issue of instructional technology and finalization of the new J.C. curriculum. The fact that the first few years of the college may well be experimental is not in any way disadvantageous. It represents an awareness of the unique opportunity to reconsider approaches to the training of teachers; an opportunity that will be difficult to recapture once the college is well established.

4.3.3 Inservice Teacher Education

Inservice teacher education in Botswana suffers from the need to serve a variety of institutional administrative structures. Inservice training is delivered by education officers from four departments in the MOE, by tutors and

professors from the PTTCs and the University, by regional education officers, by staff from education centres, by administrators at the schools, and others. Inservice education activities are, at times, based on a formal assessment of teachers' needs; at other times, on a critical national problem, as part of a national curriculum effort, or as part of an innovation in teaching techniques or materials. Some teachers receive certificates for participation; others receive no recognition. Some teachers are released from classes to attend the inservice sessions; others attend, without pay, during their holidays. Teachers from some schools regularly attend inservice sessions; teachers from other schools seldom attend such sessions. Inservice activities, in some instances, are repeated several times in order for participants from many schools to be accommodated; in other instances, workshops are given once for those who are able to attend. Training for the purpose of replicating workshops is often given to educators; some replicate the workshops, others do not. Some who do replicate the workshop, try to re-arrange a 30 hour five day workshop into a three hour session.

Education Centres, the administrative entities most likely to form the nucleus of any new inservice delivery system are currently staffed with only two persons and function almost exclusively for primary education.

The in-service delivery system for primary school is currently reaching only 180 schools of the 518 schools. The secondary system undoubtedly reaches a higher percentage of the secondary schools but no data exists. Furthermore, at the secondary level, inservice training is more often than not delivered within a subject field. School-wide changes, such as the dramatic change in the purpose and philosophy of the junior secondary school, must be dealt with, discussed, defended, and implemented without the availability of someone with the technical expertise to teach, explain, and work with the staff.

Discussions with teachers quickly produce a list of inservice needs which differ from those discussed in educational institutions, the Ministry, and other sources. Teachers want help with classroom management, with remediation techniques, with continuous assessment, with poor English speakers, with "home-made" teaching aids, and assistance for the beginning and untrained members of the school staff. Admittedly, some of these can and should be handled within a subject matter orientation but just as many can be appropriately dealt with in a general setting with teachers from one standard or teachers from several schools.

Beginning and untrained teachers need special assistance. Research findings indicate that the first three months of a teacher's experience are the most critical determinants of that teacher's eventual classroom success. Support programmes delivered by the head teacher, the deputy, a senior teacher, or other appropriate personnel need to be devised and implemented.

There are currently about 1800 untrained primary teachers and 300 untrained secondary teachers working in Botswana schools. This group needs to be identified and studied so that their characteristics and their needs are known, and to determine the likelihood of their being able to attend inservice programmes. An in-class assessment of their skills or an analysis of head teacher evaluations should demonstrate that some of this group are successful teachers and ought to be maintained in the system. Most of this group eventually ought to attend a teacher training institution and become fully certified. On the other hand, assessment and evaluation data may show that some of this group should not be teaching and should be the first to be replaced by the newly trained graduates of the teacher education institutions. Eventually, a programme of on-site training for those who are not replaced, for those who did not attend teacher training, for those judged "effective" by administrators and external experts, and for others with special talents should be implemented. It would

appear, however, that a wide variety of inservice needs -- the curriculum changes, the continuous evaluation, the junior secondary changes, the new and beginning teacher assistance, etc. -- have a much higher priority than the licensing of the untrained teachers until the number of qualified or trainable teachers is determined. Over 370 untrained primary teachers entered TTCs this year and over 100 untrained CJSS teachers enrolled at Molepolole. Initial efforts to increase this emphasis might have a higher short term payoff.

4.4. NEEDS

Major needs presented below are for an improvement in the coordinating mechanisms for teacher education, a systematic evaluation of the teacher education programmes at the preservice level, a design of an inservice delivery system, and the development of a comprehensive plan for the training of junior secondary teachers at Molepolole.

4.4.1 Administration and Supervision

The system for teacher education has numerous elements, directed toward multiple goals. In some cases, these goals compete for scarce resources. In other cases, the programmes carried out in pursuit of the goals by different agencies create opposite or conflicting results. At the primary level, for example, expansion of the system capacity will require more teachers while improvement of instructional quality will require better teachers. At the secondary level, demands for rapid expansion compete with demands for reduction of the untrained and expatriate teachers and the increased localization of staff. Similar competing demands throughout the system of teacher education, for scarce financial and human resources can best be resolved by a common governance system for all of teacher education, by a systematic data collection on teacher characteristics including performance, attrition, etc., and by integrating the planning approach within those two efforts more fully.

A secondary need within the administration area is the need for closer coordination among the programmes. It does little good to train 50 new Science teachers if these teachers are then assigned to teach outside of their field while teachers at other schools not trained in Science are assigned to teach Science. Similar coordination within the inservice system must occur so that it is known who participates in inservice training, what schools are included or excluded, what needs are being met or ignored, etc.

4.4.2 Systematic Evaluation

Are the current programmes as good as they could be? Are the current administrators aware of the strengths and weaknesses of their programmes? Are the current institutions utilizing the diversity of their staffs in the most positive ways? Are the head teachers and headmasters provided opportunity to work with institutional staff in setting goals for needed teacher training? Are current admission and counseling procedures successful in admitting and retaining the best teacher candidates? Are those tutors teaching in one institution aware of the differences in perspective among them as to the "ideal" teacher and, if so, how are they using those professional and cultural differences to strengthen the program?

Similar questions can be asked of the inservice training that takes place in education. While it is important to encourage more inservice training within a designed delivery network, the urgency of increasing the amount of training must not result in the lessening of quality of the product. Continuous assessment of programmes must accompany the movement towards continuous assessment of children.

4.4.3 Design of an Inservice Delivery System

At the present time, the inservice delivery system is simply not able to provide the necessary training for the teachers in the schools within the timeframe needed. A new delivery system must be systematically designed, implemented, and evaluated at the same time that it is used to meet the urgent training needs of the Ministry. An expansion of the

education centre concept that includes inservice providers -- both primary and secondary assigned full-time to the centres would seem to be the most likely and efficient way to begin. Such providers might be serving teachers seconded to the centres after a short training program. Centres could be clustered by regions (4 clusters) with staff talents shared by the three or four centres in a region.

4.5 CURRENT PLANS

The "current plans" related to teacher education which were included in the original sector assessment have, for the most part, been realized. Both Tlokweng Teacher Training College and Molepolole College of Education have been built, staff has been hired, students have been admitted, and the first term has been completed.

PEIP I is entering its last year of operation but PEIP II has been approved in concept and the process for selecting the contractor is underway. The expectations for PEIP II include considerable work within the inservice subsector at the primary level. JSEIP embodies similar commitments for inservice at the secondary level.

A group has been formed to study and improve the admissions procedures for the PTTCs. The University and Molepolole College of Education have started the process of negotiating the affiliation relationship. Problems with the information system related to teacher assignment, transfer, the untrained teacher, and similar personnel functions have been recognized and plans have been prepared to assist in the resolution of such difficulties.

4.6 CONSTRAINTS

Several constraints to the improvements of teacher education have been referred to throughout this chapter. Three remaining principal constraints recognized in the sector assessment concern present organizational structure and coordination, staff for the Ministry of Education preservice

and inservice programs, and costs of an expanded inservice program.

The current organizational structure and staff evolved to serve the needs of a smaller and less complex system. Personal relationships could always form the basis for resolution of differences. Distance, decentralized decision-making, a growing diversity of staff, and lack of agreement on goals in a rapidly moving program are but some of the difficulties that cause the listing of organizational structure as a constraint.

The staff in Primary and Teacher Training, in Secondary Education, and in Curriculum Development and Evaluation are too small for the responsibilities and roles necessary to carry out the current plans. The staff for inservice delivery do not exist and must be created from the ranks of educators in a variety of current assignments. The staff at the four PTTCs and the MCOE are highly dependent upon expatriates and must continue the movement toward localization. Relatedly, many of the Batswana currently assigned to the PTTCs are trained in secondary education and need to be replaced by personnel trained in primary education.

Currently assigned personnel, no matter how skilled and sincere, cannot meet the inservice needs of the expansion and improvement programmes at either the primary or junior secondary level within the timeframe for NDP VI. New staff must be identified, trained, and assigned to the inservice responsibility. That new staff and the centres in which they will work (some of which will be built from donor sources but others must be upgraded from local revenues) represent a major investment. Recurrent costs include the direct costs for operating the system, the costs for the involvement of teachers during vacations, after hours, and weekends (some of which are not financial but are costs nonetheless), and the costs represented by eventual improvement in teacher salaries based upon the additional training, skills, and responsibilities which often result from credential-based systems that evolve from extensive inservice programmes.

4.7 ISSUES

Attention is now given to several issues based on the above presentation of status, analysis, needs, plans, and constraints. These are discussed with reference to the issues of external efficiency, internal efficiency, access and equity, and administration and supervision.

4.7.1 External Efficiency

The three issues related to external efficiency concern the relevance of the curriculum of the preservice programs to improving the quality of schooling, the congruence of the programme at Molepolole with the new junior secondary curriculum, and the long term effects of an expanded inservice programme.

Given the significant opportunities for raising the quality of instruction at the primary level, improving the present programme of the preservice institutions may be one way to prepare more effective teachers. Although some aspects of teaching effectiveness may be associated with non-school factors or with shortcomings within the system, other aspects are related directly to the preservice programme. The de facto curriculum at each institution must be recognized, evaluated, and utilized as a strength when appropriate and dealt with as a weakness when found to be so. (The de facto curriculum is that caused by differences in educational philosophy, background and preparation of the instructors, cultural orientations of the students and staff, differences in formats and experiences of the students, etc.)

References to the programme at Molepolole will appear in both the internal and external efficiency discussions. From the external perspective, the need for congruence between the goals of the Ministry directed junior secondary expansion and improvement programme and the evolving preservice preparation programme at Molepolole cannot be overstressed. Between now and the end of NDP VI more teachers will be trained at MCOE than are now teaching in the CJSSs. Within a very short time, a majority of the junior secondary teachers will be graduates of this institution. It is incumbent upon the programme

planners at the institution, therefore, to be in concert with the assumptions and goals of the overall program. Some of the areas to be studied to determine congruence, or lack thereof, were discussed earlier in this chapter.

From an external perspective, the design, implementation, utilization, and evaluation of an expanded inservice delivery system raises a number of issues and problems for the total educational effort. A new cadre of personnel will be created, a pressure for licensing of the untrained will increase, requests for remuneration and differences in certification will emerge, and negative reactions concerning those who do not make use of the opportunities will begin. As the program becomes effective, additional, possibly more complicated and expensive needs, will be assigned to it. Given the time pressure which will accompany the total process, the mere threat of the existence of these additional pressures will make the task even more difficult.

4.7.2 Internal Efficiency

A number of internal efficiency issues can be derived from the data and analysis presented earlier. These include the design and development of the curriculum at Molepolole, the clarification of the status of the Department of Teacher Education, an increase in the staff at the Ministry working in the teacher education areas, improved admission and examination procedures for the five institutions other than UB, and training designed for the new cadre of inservice providers.

It is important that the total three year curriculum be designed to reflect the goals for the junior secondary schools and be subjected to continuous evaluation and revision. For the past two years, the new Department of Teacher Education has been proposed, planned, discussed, and tentatively approved. Its uncertain status has delayed a number of decisions. A transition plan, developed at the highest levels in the Ministry, enabling professionals to continue operating during the transition is needed, if, in fact, the Department will be a reality.

The Ministry of Education is multiplying the number of schools by a factor of two at the secondary level, and increasing the number of primary schools to meet enrolment demand; implementing a revised curriculum across nine school years with the inservice associated with that, and increasing teacher education and supervision in a variety of ways with a staff that is already seriously overworked. A study needs to be completed that analyzes which of the current tasks are appropriate for the current EOs and which tasks associated with teacher education remain unassigned. Again, a management design that worked well in a less complex system now is found problematic as the system rapidly expands.

Currently, over 13,000 individuals begin the admission process at the PTTCs, over 4,000 sit for entrance examinations, over 1000 are interviewed, approximately 650 are admitted, and over 600 will receive a diploma. With selection figures of this size, the system must have reliable, valid procedures to insure that the best candidates are selected and that the best graduates are assigned. With the presence and preference for untrained teachers as candidates, procedures must be used which ensure that the most effective of the untrained teachers are those selected. Specific criteria could be developed as a result of a study of the successful candidates from the preceding two or three classes. Data exist but needs to be compiled and analyzed concerning the characteristics of the top achievers in recent classes. These data could then be used to construct a profile of the ideal applicant.

Inservice providers capable of meeting current inservice needs and plans do not exist. A cadre of inservice providers must be trained. Who shall they be? From what ranks will they be drawn? What criteria should be used to select them? Who will be responsible for training? Will two weeks, one month or eight months be needed for training?

4.7.3 Access and Equity

There are no substantive issues with respect to access to the PTTCs, MCOE, or the programmes at the University, based

either on sex or the district of origin. There are more females than males enrolled at the PTTCs and more males than females in the other programmes. At MCOE, the group is 60:40 male to female. In the DSE programs at the University, the ratio of males to females has been between 4:1 and 6:4 depending on the major and the year of admission.

Differences based on district of origin do exist but are much more a function of population than anything else. The existence of boarding facilities at each of the institutions works to equalize access. No systematic restriction of access exists.

4.7.4 Administration and Supervision

The most significant issue examined in this chapter is the need for a closer and more integrated governance structure for teacher education. This is especially critical given the expansion which is occurring on several fronts and the variety of local and donor agencies involved in the process. This issue has two aspects, one related to the need to conceptualize teacher education in its fullest extent and the other to an organizational structure capable of providing leadership and policy direction to the separate parts. The issue is no longer one of having a sufficient number of capable units able to accomplish the necessary tasks, except in the inservice area. The issue is one of coordination and amalgamation of the separate pieces into a unified system in which all parts contribute to the achievement of agreed upon goals.

4.8 CONCLUSIONS

The following six conclusions with regard to teacher education are based on the information presented and reviewed above.

Conclusion 1: There is a need to create a governance unit capable of providing overall policy and management control for teacher education activities whenever and wherever they occur.

Conclusion 2: A common conceptualization of teacher education must be developed by the educational leadership group. This conceptualization must fully integrate the various separate aspects -- the untrained, the preservice component, the assignment process, the induction process, the inservice component, etc.

Conclusion 3: The preservice programs at the PPTCs and the University have now matured and are beginning to take on their own professional personality and individual differences. A systematic evaluation of each programme which, includes feedback back from head teachers and headmasters and graduates, should be undertaken at regular intervals.

Conclusion 4: The goals of each preservice teacher training program need to be in congruence with the goals of NDP VI and the current expansion improvement efforts at the primary and junior secondary levels.

Conclusion 5: The teacher training programme for junior secondary teachers at Molepolole College of Education needs to be developed at a faster pace than the current staff is working. Following development of the comprehensive plan, it needs to be tested for feasibility and congruence with national goals prior to the development of individual course syllabuses.

Conclusion 6: A totally new inservice delivery system needs to be designed, implemented, and evaluated in a very short timeframe in order to meet the inservice needs associated with the primary and junior secondary expansion and improvement goals.

4.9 RECOMMENDATIONS

The following recommendations for teacher education are in priority order according to their thematic emphasis on administration and supervision, external efficiency, and internal efficiency.

Recommendation 1. Review existing teacher education governance mechanisms and create a unit capable of providing overall policy and management direction to all units of the educational establishment involved in teacher education.

Recommendation 2. Develop a fully integrated and costed plan for all elements currently being proposed and initiated in teacher education.

So much is happening in so many sectors of the educational community that a fully integrated and costed plan is very essential.

Recommendation 3. Evaluate the preservice programmes at the PPTCs and the University of Botswana.

The differences in goals, attitudes, cultural and professional orientations, and opinions concerning the quality of the graduates will all be dealt with systematically within the recommended process. Such would increase the relevance, the quality, and the attitudes about the preparation programmes.

Recommendation 4. Develop an inservice delivery system using the Education Centres as the starting point with staff selected from existing instructional staff in primary and secondary schools and trained in a special program designed for this purpose.

The current system does not have the capacity to meet the country-wide needs of the primary and junior secondary expansion and improvement program. Centres with two staff members and part-time assistance from a variety of sources cannot begin to meet the current need and plans.

Recommendation 5. Develop a comprehensive curriculum at Molepolole College of Education consistent with the goals of NDP VI and the junior secondary expansion programme.

The school is already operating. The curriculum is conceptualized quite well in the mind of the Principal and development is proceeding along lines specified in 1981. The time-frame needs to be advanced more rapidly and the congruence with goals needs to be assured.

Recommendation 6. Proceed with the establishment of a separate Department of Teacher Education and provide for transition to its operation.

The new Department, if it becomes a reality, will absorb responsibilities currently assigned to several other units. The transition process when a new entity is created from parts of several existing units is always difficult. Careful planning is necessary.

Recommendation 7. Provide additional staff for the Ministry units involved in the teacher education aspects of the primary and junior secondary expansion/improvement program.

A broad definition of teacher education, should be utilized, for example one that will result from activities which will grow out of Recommendation #1; this includes activities of five different departments in the Ministry. It would certainly start with an analysis of the job descriptions of current EOs.

5.0 PRIMARY, JUNIOR SECONDARY, AND SENIOR SECONDARY CURRICULUM

5.1 INTRODUCTION

The curriculum is clearly one of the most important inputs into the educational process. It represents a major government investment and significantly influences the nature of the knowledge and skills individuals bring to the marketplace. Where curricular design is poor or implementation weak both internal and external efficiency can be expected to be low. At the same time appropriately designed and delivered curriculum have been shown to have a strong effect on both retention and achievement. The summary and analysis of the primary, junior secondary, and secondary curricula presented in this chapter focus on issues related to design, implementation, and evaluation. Before turning to those issues, it is useful to review the principles which underlie the curriculum development process, since these serve, at least partially, as guidelines for the analysis which follows.

First, all curricula reflect or represent a system of values, a group of historical, political, social and philosophical characteristics. In developing countries, particularly former colonies, frequently the problem is how to develop a truly national character apart from that which has been inherited from and identified with the colonial power.

Second, all curricula imply selection because nine years or twelve years of schooling is a relatively short period of time, not all can be taught, and what is chosen to be taught will have to generalize to future situations that cannot now be fully or even partially anticipated.

Third, the necessity of selection means that it is necessary to have criteria with which to guide decisions. These may include ideological criteria (for example, nationalism), psychological criteria (like child development stages), relevance (practicality vs. generality), fiscal

capacity, etc. Fiscal capacity raises such questions as: can the learning objectives be accomplished with available resources or, more globally, what should be taught in school.

The fourth principle is structure. All curricular organization is related to structure, the manner in which the content (knowledge, skills, attitudes,) are organized and related to each other greatly influences initial learning, posterior recovery of what was learned, and successful generalization and application of knowledge to the resolution of a new problem.

This leads to methodology, since all content and its structure requires a form of delivery with which it is consistent. How something is taught is closely related to both the quality and quantity of what is learned.

The sixth principle is that of evaluation. Formative and summative evaluations based on student assessments and classroom observation are integral parts of the implementation process. They provide information on the support systems needed to improve delivery and the fit between objectives and outcomes.

5.2 PARTICIPANTS AND RESPONSIBILITIES

In this section, the major departments and units who are or have been involved in the curriculum area are described.

5.2.1 Curriculum Development And Evaluation Department.
This department is composed of five programme sections, or units:

- Curriculum Development Unit
- Research and Testing Centre
- Examinations Unit
- School Broadcasting Unit
- Teaching Aid Production Unit

All of these units play important roles in the development, continued improvement, implementation and evaluation of the new nine-year basic education programme from 1986 onwards. The main responsibilities of the Curriculum Development Department are:

- a) revision of the entire primary school curriculum and preparation of the teachers' guides and pupils' materials;
- b) revision of the examination system to reflect these curricular changes, including greater emphasis on the evaluation of reasoning ability,
- c) the development of continuous assessment and progress reporting procedures, and the promotion of a remedial teaching programme for primary schools (in collaboration with the teacher training colleges).

5.2.1.1 Curriculum Development Unit (CDU). This unit has been primarily responsible for development of new curricula, initially at the primary level, where it had the main responsibility for the development of the primary syllabuses. However, during the past two to three years, it has increasingly become involved, in cooperation with the Secondary Education Officers, in the development of the revised syllabuses for the junior secondary part of the new nine-year basic education programme. In some subject-area programmes, it has been necessary to redesign syllabuses from year one to year nine. This, it was felt would ensure continuity and progression of programmes.

The main professional tasks of the CDU are:

- to coordinate the implementation of all the Ministry's curriculum development policies affecting primary schools, secondary schools, and teacher training institutions;
- to translate educational goals into educational programmes;
- to monitor the revision of syllabuses;
- to plan for the design and preparation of materials (including audio-visual aids) to be used in learning and teaching;
- to organize trial use, evaluation and eventual introduction of new or revised curriculum materials in schools and colleges;
- to consult with other departments or institutions in planning for the introduction of new curriculum

materials into preservice and inservice training courses;

- to identify and (directly or indirectly) to enlist the services of suitable writers, illustrators, editors and other relevant advisors;
- to identify and seek to provide opportunities for Batswana to gain further training, experience and qualifications in fields relevant to the professional work of the department;
- to advise the Ministry of Education on matters pertaining to the revision of curricula, syllabuses, examinations and on procedures for assessment, reporting and record-keeping.

This unit has produced all of the syllabuses for primary education and has distributed them to schools throughout the country.

During 1983/84 the CDU became more actively involved in the development of the Nine-Year Basic Education Programme, through close working consultation with the national primary subject panels and the secondary school subject panels, and the curriculum developers in the CDU and the subject specialists/ education officers in the Secondary Schools Department.

The CDU also has a publishing programme through which it coordinates with the publishing companies (particularly MacMillan). Texts published in 1984 and 1985 include:

Social Studies Pupils Books Standards 1 and 2
Dipalo I Mathematics (for Standard One)
Dipalo II
New Primary Mathematics for Botswana (Standard Seven)
Dipalo III (1986)

Other projects are currently being analyzed or are in various stages of preparation and/or trial testing and should take shape during the course of 1985. The Social Studies Pupil's Book Standard 3 and Dipalo III (Mathematics Workbook for Standard 3) will be ready for distribution and general use in early 1986. It is expected that the Standards 5 and 6 New Primary Mathematics for Botswana textbooks will be published during the course of 1986.

CDU also participates in and organizes workshops and seminars to help disseminate school curriculum. CDU organized more than a dozen important workshops in curriculum development and related issues during 1983/84, and assisted at seven international workshops offered by UNESCO, UNICEF, and other organizations.

The critical issue in the CDU is its staffing. It is drastically understaffed. At the current time it has:

| | |
|--|---------------------|
| One Principal Curriculum Development Officer | Administrator |
| One Curriculum Development Officer | English |
| One Curriculum Development Officer | Mathematics |
| None | Religious Education |
| Two Senior Curriculum Development Officers | Science |
| One Senior Curriculum Development Officer | Setswana |
| None | Social Studies |

As of January 1986, three additional officers will be based in the department under the aegis of the Junior Secondary Education Improvement Project. These will focus on techniques of curriculum development, in general, rather than on specific subject areas. They will also be expected, however, to work with the Teaching Aids Production Unit and the School Broadcasting Unit. It would seem that each core subject matter area should have one senior and two regular curriculum officers, and one regular officer for each of the optional subjects. This would result in a staff of more than twenty persons, instead of the six actually at work.

5.2.1.2 Magazine Production Unit. The Magazine Production Unit is responsible for the preparation and free

distribution of three publications which are each published three times a year. Those publications include:

- Primary Education in Botswana, distributed to primary teachers (7,000 copies);
- MOSO, a children's magazine (35,000 copies);
- Thuto-Thuto, a magazine that keeps government personnel aware of events in the Ministry of Education.

Although this unit was transferred from the Primary and Teacher Training Department to the Curriculum Development and Evaluation Department, it has recently been the focus of a UNESCO consultancy that looked into aspects such as:

- structure of the unit
- equipment/facilities
- staffing
- related training needs

Presently, it is not very clear whether the Magazine Production Unit will continue to be part of the Curriculum Development and Evaluation Department or become a separate section/department under the Ministry of Education Headquarters.

5.2.1.3 Research and Testing Centre (RTC). This Unit has various responsibilities, including:

- School guidance and counseling for the educational system at all levels;
- Test development and research for the entire nine-year programme covering the Standard Diagnostic Testing Programme, the Primary School Leaving Examination and the revised Junior Certificate Examination/Assessment Programme;
- Aptitude testing, for special requests, such as the Brigades (an activity which has been diminishing);
- The mature age entry test, for older entrants into the University;
- The teacher training college selection test which last year had four locations and about 7000 applicants (this includes tests and assistance in preparing interview formats, etc.);

- Research, which is everything normally related to tests, examination results, performance, test item analyses, etc.;
- Data processing administration;
- Continuous assessment development.

The RTC has one principal research and testing officer, three senior research and testing officers, and three research and testing officers, plus two technical assistants provided through foreign agencies.

5.2.1.4 Examinations Unit. This unit is primarily responsible for the administrative aspects of the PSLE and other examinations. Activities include:

- setting examination schedules
- regulations
- printing
- packaging
- distribution of examination materials

It has limited involvement in the professional development of the examination through the appointment of examiners and moderators from the recommendations of the National Subject Panels and Education Officers. In addition to the PSLE, the professional development of the revised J.C. examination should increasingly become a major responsibility of the Research and Testing Centre. The Curriculum Development Unit Staff and the Secondary Education Officers should obviously be involved in the specifications and verifications of content coverage in the various subject-area examinations.

5.2.1.5 Teaching Aid Production Unit (TAPU). The Teaching Aid Production Unit, TAPU, was conceived in 1970 and was established in 1976/77, in response to the teachers' requests for more suitable aids. TAPU acts as a production facility and as a resource center for the primary schools and it is responsible for training teachers in the making of aids. TAPU has a woodwork shop, a general workshop, a painting booth, a shop for metal work, a printing department, darkroom, and other facilities and equipment.

Requests for teaching aids come in from inservice projects, Education Officers, curriculum development panels, head teachers, teachers and the teacher training colleges. Prototypes are made and teachers and inservice officers evaluate them. If the aids are found to warrant wide distribution, TAPU makes plans for mass production.

The professional staff of TAPU includes its director and two expatriates on loan from other agencies. The rest of the staff are untrained and require considerable supervision. The unit clearly needs two or three more professional staff to meet its planning, design, evaluation, and supervision responsibilities. TAPU also requires better lower level staff. For example, it has trouble hiring printers because of bureaucratic requirements that all printers must be certified by the Government Printing Office (GPO).

TAPU has overextended itself in relation to its present resources. By responding to the diversity of teacher demands it has fragmented its operations to such an extent that some work is not completed adequately. TAPU must either expand its staff dramatically or reduce its scope of activities.

5.2.1.6 School Broadcasting Unit. This unit has one director and two program officers who are responsible for preparing approximately one hour per day of class instruction time for radio broadcasts.

5.2.2 Secondary Education Officers

One of the critical elements in the development of the new junior secondary curriculum has been the major role played by the Secondary Education Officers. These officers have been the ones responsible for developing the existing syllabuses for Forms I and II.

A Secondary Education Officer reports to the Chief Education Officer, Secondary, and acts as an inspector, advisor, and a supervisor. This professional has administrative duties, school visits and formal team

inspections, curriculum development duties, training supervision, and examinations duties. The EOs represent the MOE on various committees relevant to their subject matter expertise, are involved in Form I and Form IV selections (under the current system), and advise the Chief Education Officer and the Director of the United Teaching Service about transfers, recruitment, placement, promotion, discipline and upgrading. They also estimate the annual recurrent costs for running their subject departments.

The EOs make informal school visits at irregular intervals to help subject teachers improve their performance. They also participate in formal team inspections of schools; these inspections involve detailed planning, careful implementation, and the production of constructive recommendations.

The curriculum development activities of the EOs include working in coordination with the Curriculum Development Officer and the national secondary subject panels to insure that the curriculum meets the needs of the subject and the schools. EOs also monitor curriculum implementation, control the work of the specific subject panel, organize the writing of supplementary materials, maintain liaison with other institutions, such as the Polytechnic or the University, and are responsible for producing the JC examination syllabus for the National Examination Unit.

In the training area, the EOs' major area of interest is inservice needs. They organize courses, workshops, and seminars on subject content areas and they are responsible for assuring that all teachers are introduced to the new junior secondary school curriculum.

The EOs also have responsibilities related to the two external examinations (the Cambridge Overseas and the National Junior Certificate). In collaboration with the Examinations Unit, the EO's insure that the examination papers are set in accordance with the syllabus, identify personnel for the positions of examiners, moderators, markers, etc., see that the materials are distributed on time, and make arrangements for

practical examinations such as those of Agriculture and Home Economics.

Given the already extensive responsibilities of these officers, it is apparent that they should not be required to take on additional responsibilities in the area of curriculum development. Certainly their participation in implementation and evaluation of new curricula is important, but they need not be directly involved in the design and development process, although they should sit on the subject matter panels.

A major problem in limiting the responsibilities of the EO's is that the CDU is drastically understaffed. If the CDU were asked to assume full responsibility for development of the junior secondary curriculum, it simply would not be in a position to do so.

5.2.3 Teachers and Headmasters

While teachers and headmasters are the key persons in the implementation of all new curricular materials, teacher representatives also participate in curriculum development work on a continuous basis. This is possible through their involvement in the National Subject Panels, both primary and secondary. They contribute in the initial conception of programmes, development of syllabus outlines, and occasionally in the writing of materials. Teachers are also required to provide feedback on the implementation of the curriculum. Since their role is critical to successful implementation, a greater emphasis on obtaining quality input from teachers and enhancing the effectiveness of officer-panel-teacher interactions might be in order.

5.3 OFFICIAL PHILOSOPHY OF EDUCATION

Based upon existing documents it is possible to state that the philosophy of education advocated by the MOE emphasizes the following:

1. A child-centered approach to teaching where:

- a) learning content and teaching strategies are responsive to the interests and experiences of children rather than reflective of those of the teacher;
 - b) the teacher is viewed as a facilitator and guide to learning rather than a reservoir of information.
2. An understanding of child development and individual differences, that include the realization that:
 - a) children learn at different rates;
 - b) children learn some subjects (or concepts) more easily or more quickly than others;
 - c) some children learn better in small groups with individual help and others by independent study.
 3. Reinforcement and success are two of the best motivators in learning.
 4. Active learning (doing) is much more effective than passive learning (listening).
 5. The education system should challenge all children to learn. All children can be successful within their own limits.
 6. The progress of children should be continually evaluated.

The official philosophy of education for Botswana also includes:

- a shift of focus from the most capable students to all students;
- a recognition of the diversity that exists in the nation, and the incorporation of this awareness into the new programme; and
- a shift from centralized responsibility and authority toward greater local involvement and responsibility.

Traditionally education, particularly at higher levels, has been aimed primarily at those who would continue along the academic education track, paying relatively little attention to those who would go for technical or vocational training, and even less to those who terminate their education early. The

change in emphasis revealed in the philosophy is to one of relevant learning experiences for all students, not only for those who will continue within an academic framework.

Further, the new emphasis clearly recognizes diversity both among students and communities. The plan is, in part a response to diversity among communities and one that fully acknowledges community commitment as essential ingredient in the production of learning.

This new philosophy will be concretized in the new curriculum (represented in the syllabuses). The new nine-year curriculum is intended to be more relevant, more practical, more behavioral (in terms of specifications of outcomes), and more integrated (among subjects).

The implications of the new philosophy for instruction are as follows:

1. An emphasis on diagnosis of learner deficiencies rather than classification of student's ability.
2. Individualized and small group instruction.
3. A flexible timetable responsive to children's and teacher's needs.
4. Continuous assessment of pupil progress.

5.4 THE PRIMARY SCHOOL CURRICULUM

This section presents an overview of the primary school curriculum and discusses the relationship between the official curriculum and actual classroom operation.

5.4.1 The Primary Syllabuses

The revised primary syllabuses for Science, Mathematics, Social Studies, English, Setswana, and Religious Education were prepared and distributed during 1982 and 1983, but the diffusion process was only fully completed in 1984. This suggests that the first complete test results will only be available when the cohort entering school in 1984 take the Primary School Leaving Examination (PSLE).

5.4.1.1. The Social Studies Syllabus. This syllabus has a brief introduction which suggests basic principles and approaches to the subject area. The four approaches which the teacher is encouraged to use include inquiry, problem-solving, use of the pupil's own experience, and a multi-media approach.

The seven principles of learning social studies include:

- relating content to the students' environment;
- facilitating individual growth;
- encouraging students to exercise social qualities such as leadership, cooperation, etc.;
- giving purpose to learning;
- including a variety of examples;
- allow for adequate practice; and
- help develop status and self-respect.

The remainder of the syllabus is simply a topic outline with content suggestions. There are no stated student behaviors and neither sequence nor topic inclusion are clearly justified. In the case of social studies and other subject areas, objectives, behaviors, and sequencing are or will be spelled out in greater detail in the teachers' guides. Figure 5.1 shows a sample page from the syllabus. At this writing there are social studies texts - pupils books for Standards One and Two were distributed at the beginning of 1984. The pupil's book for Standard Three was to be evaluated and ready for publication sometime during 1985. Also, the primary social science studies panel has embarked on a programme to develop support materials in the form of teachers' handbooks to accompany the syllabuses.

5.4.1.2 The Science Syllabus. This syllabus begins with nine overall curricular objectives for the student which appear to be appropriate and reasonable. These are:

FIGURE 5.1

SAMPLE PAGE: SOCIAL STUDIES SYLLABUS

| TOPIC | CONTENT | REFERENCE |
|------------------------------|---|-----------|
| Citizenship in the Community | <ul style="list-style-type: none"> a. In the family b. Personal value c. Rights d. In the community | |
| Local Ecology | <ul style="list-style-type: none"> a. Soil b. Water--rivers, dams, taps c. Air--moving air, what is air, balloons, model aeroplane d. Animal life | |
| Local Economy | <ul style="list-style-type: none"> a. Livelihood b. Use of money--what it is, why we have it, toy shop in the classroom, bank, post office c. Local production d. Local distribution | |
| Local Communication | <ul style="list-style-type: none"> a. Traditional b. Transport--various kinds of transport, simple graphs based on various kinds transport passing the school, highway code and road signs c. Post d. Newspaper e. Radio and telephone | |

- express awareness of and interest in the natural world surrounding the student;
- develop observation skills through activities such as examining plants, animals and non-living things and develop the additional skills required to record the observations through oral and written reports as well as drawings, diagrams, and graphs;
- find out information for themselves by observation and investigation while using the teacher's assistance in drawing conclusions;
- gather knowledge which will enable them to understand science concepts likely to be met in everyday life;
- develop skills in using simple scientific apparatus such as rulers, thermometers, etc.;
- express awareness of involvement of science in other school subjects and everyday life;
- express awareness of science contribution to the social and economic life of the community;
- express a respect for all life and a desire to maintain the quality of their surroundings.

The objectives are followed by an explanation of a discovery-inquiry approach which should be used. The syllabus is set up by: a) topic area; b) student behavioral objective; c) suggested approach and activities; d) content; and e) application.

Overall, the objectives tend to emphasize verbal rather than scientific skills. For example, in the sixth standard there are a total of thirty-nine objectives of which twenty-seven are in the domain of verbal information, eight in the intellectual skills domain, and four which fall into both verbal information and intellectual skills. There are no objectives which suggest development of either aptitude or of cognitive strategies. Several of the objectives imply the use of motor skills but the assumption seems to be that these skills are considered to be already developed. The absence of objectives with respect to attitudes is surprising since four of the nine general objectives include or imply the development of attitudes.

This pattern is repeated in the seventh standard where of a total of twenty-four objectives, eighteen are in the verbal information domain, two clearly require intellectual skills, and four are in both domains. Again, there are no objectives which refer directly to attitudes nor to cognitive strategies. This is both inconsistent with the overall goals established and is not good curricular practice. Figure 5.2 shows a sample page from this syllabus.

Teachers' guides in Science are available for all standards. Guides for Standard Five through Seven were completed in 1983 and distributed in early 1984. The Science panel has expressed interest in receiving feedback from the teachers concerning the adequacy of the guides as the panel does not consider them to be in "final" form.

One of the serious limitations in teaching Science at the primary level is the lack of appropriate pupils' materials and teachers' references (which should be based on the revised Science syllabus). To remedy this problem, the panel has embarked on a project to produce a series of pupils' books and teachers' science source books. Some of the source books have reached an advanced stage of preparation and should be available in the schools during 1985.

5.4.1.3 The Mathematics Syllabus. This syllabus begins by suggesting four basic principles: the use of real-world experiences, permission for exploration and discovery, extensive practice to achieve generalization, and teacher development of applications of learned concepts. This is followed by a five step sequence for development of mathematical skills:

- planned and spontaneous discovery;
- discussion of relationships;
- internalization and expansion of concepts;
- teacher stated generalizations; and

FIGURE 5.2

SAMPLE PAGE: SCIENCE SYLLABUS

| | | | | |
|------------------|---|---|---|--|
| Soil | Pupils will identify the causes of the soil erosion. | Discuss and experiment with the different factors which cause soil erosion--wind, water and animals. Observation of cattle trek routes; improper watering of pot plants or gardens with a hose pipe or watering can. | Water, wind, and animals can cause soil erosion. | |
| Care of the Body | The pupils will demonstrate health habits by being well groomed every day. | Explain and demonstrate ways and means of grooming. | Pupils will be aware of good grooming practices. | Pupils will groom themselves daily. |
| Diseases | Pupils will describe germs as disease organisms. Pupils will describe means of transmission of common disease. | Explain what disease producing and harmless germs are. Illustrate how the germ transmits diseases. | Some germs cause disease while others do not. | Germs are very small (invisible) plants and animals. |
| Nutrition | | Illustration of body-building foods. | A child will be aware of the different functions. | Children will observe people |

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- applications by students.

Six broad objectives are given, beginning with the:

- development of a positive feeling and interest for the subject;
- developing a foundation in basic concepts;
- using concepts to solve everyday problems;
- thinking logically;
- applying mental skill in the four basic operations; and
- demonstrating written mathematical language.

The subject is then presented in topics, student behavioral objectives, and related concept. An example is shown in Figure 5.3. The text of this subject, in Setswana, called Dipolo 1 (for Standard One), has been distributed to all schools. It was published by MacMillan, which is also publishing Dipolo 2 (Standard Two), scheduled to be available for distribution during 1985. The Standard Three book is currently being tested in 20 schools. Texts for Standards Four, Five and Six have been adapted from an existing series from Zimbabwe, New Ventures in Mathematics, published by College Press. The formative tests of the Standard Seven text were quite successful and it is hoped that the text will be published and available for distribution during 1985.

The panel is currently producing a series of mathematical games for use in the classroom. Also, the Curriculum Development Unit, with the panel's approval, has produced fifteen short booklets (with little theory and much practice), on the following subjects:

- | | |
|--------------------------------------|---------------------------|
| 1. Geoboards | |
| 2. Polyominoes | 9. Symmetry |
| 3. Tangrams | 10. Number Patterns |
| 4. Number Rhymes | 11. Area |
| 5. Big Numbers | 12. Number Recognition |
| 6. Sorting | 13. Multiplication Tables |
| 7. Activities for Lower Standards | 14. Number Bases |
| 8. Time | 15. Shapes |

FIGURE 5.3

SAMPLE PAGE: MATHEMATICS SYLLABUS

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| | | |
|------------------------------------|--|--|
| <p>Addition and Subtraction</p> | <p>Ai) apply earlier addition skills to the addition of sums above 1000.</p> <p>ii) apply earlier subtraction of numbers above 1000.</p> <p>iii) demonstrate that when the original difference between any pair of numbers is added to, or subtracted from both numbers, the original difference remains unchanged.</p> <p>iv) add and subtract fractions whose denominators are the same.</p> | <p>Ai) the rules of addition and subtraction apply to all numbers regardless of size.</p> <p>ii) the original difference between a pair of numbers remains unchanged when the same number is added or subtracted from both.</p> |
| <p>Multiplication and Division</p> | <p>Ai) calculate the product of any two numbers up to and including 10.</p> <p>ii) use concrete devices to demonstrate the process of multiplication.</p> <p>Bi) determine the product of any two digit number multiplied by a single digit.</p> | <p>Ai) multiplication is the same as successive addition of the multiplicand.</p> <p>ii) the rules for the regrouping of numbers in addition applies also to multiplication.</p> <p>Bi) division is the same as successive subtraction of the divisor.</p> |

Information is not available on whether these booklets were formatively evaluated prior to general use. Their distribution has been seriously hampered by the fact that they must be explained to teachers prior to use as they will not stand on their own. In order to work independently for the teacher each would have to be expanded considerably.

5.4.1.4 The Religious Education Syllabus. This syllabus is presented in a purely traditional topic/content outline format. A typical example from Standard Four is:

Unit 1 #2. Pentecost John 3:1-21

This type of approach, of course, implies a greater responsibility for the teacher and, therefore, requires inservice. Given the importance of developing attitudes in Religion (through the interpretation of Bible passages and their application to the students' everyday lives) this subject matter would be improved considerably through the preparation of general and specific objectives.

In terms of materials, the Religious Education Panel has prepared a songbook which was printed through TAPU for distribution to the schools. Also, the pupils' books for Standards Three to Six are being printed by the CDU through the GPO for distribution in 1985.

5.4.1.5 The English Syllabus. This syllabus includes fairly extensive explanations of the subject matter and the best approaches to it. The first four standards are taught in Setswana, except for English which is given for about four hours each week in Standards One and Two, increasing to four and one-half hours in Standard Three and five hours per week from Standards Four through Seven.

The introduction of the syllabus includes discussion of learning materials, regular revision, reading and writing, topics, lexical and grammatical features, and format. The

objectives, presented by week, are specified in terms of pupil behaviors and sentence-patterns and vocabulary to be introduced, practiced and revised. Figure 5.4 shows a sample page from the syllabus. The English syllabus is complete but also is very complex and appears to be above the average reading level of the primary school teachers. In 1984, a special single volume for English for the primary standards was prepared and distributed to all the English teachers. It is very thorough, and is somewhat less difficult to read.

In the first four standards, the objective is to acquaint students with English and begin the development of speaking and listening skills, while the rest of the subjects are still being taught in Setswana. The texts used for this purpose are from the MacMillan Primary English Project and are currently under revision.

The Rainbow series, including Teachers' Guides is used for Standards Five through Seven. These texts have been modified and improved as a result of close and continuous consultation between the English panel and the publishers. Two supplementary documents have been provided to teachers, Stress in English and Approaches to Grammar.

5.4.1.6 The Setswana Syllabus. This syllabus has eight general objectives related to improving communication, understanding, listening, valuing language, and developing creativity. The specific contents are expressed through topic/content lists with references to a specific teachers' guide. Knowledge of student competencies guided the selection among existing materials. In that, it contrasts sharply with the English syllabus. A new programme, called Breakthrough to Setswana, may be incorporated into the first four years of Setswana instruction. Originally developed as an English teaching course, the methodology was adapted at the Rhodes University in South Africa for teaching regional mother tongues. The Setswana version of the course has been tested with highly favorable results and may soon be adopted.

FIGURE 5.4

SAMPLE PAGE: ENGLISH SYLLABUS

| Week | Objectives Pupils should be able to: | Sentence-Patterns and Vocabulary Introduced, Practiced, or Revised |
|------|---|---|
| 1 | <p>Revise work done in Standards 1-3, including greetings, introductions, and valedictions, the present tense (simple and progressive), the past simple tense, <u>will</u> ('ll) or <u>will not</u> (won't) + base-form of verb referring to the future; possessive <u>-s</u>; <u>can/can't</u>; the alphabet and alphabetical order; <u>classroom</u> commands and instructions; vocabulary for talking about The Family; practice reading short words beginning with b, c,d,f,g, and h; begin to use comparative and superlative forms of one syllable adjectives (<u>big</u>, <u>fat</u>, <u>small</u>, <u>old</u>, <u>young</u>, <u>new</u>) to make comparisons.</p> | <p>How old are you? I am . . . years old. How old is (Boitumelo)? bigger, smaller, taller, etc. (tall)er than . . . biggest, smallest, tallest, etc. first, second, third, . . . last housewife, letter, line, magazine, middle, people, reporter, top/bottom, word. at the top at the bottom (of the picture) on the left on the right</p> |
| 2 | <p>Talk about what can be seen in the town (referring to pictures, a wall-chart, or in-town schools--to a real town); revise <u>-er</u> and <u>-est</u>; use <u>more</u> + (plural) noun + <u>than</u> + (plural) noun to compare.</p> | <p>Who is the tall(est)? a lot of, am/is/are/was/were going to . . . by bus/car/train/taxi/boat/ship more/less/fewer There are more (goats) than (sheep). There are fewer (sheep) than(goats).</p> |

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One of the advantages of this text is that it includes within the programme a provision for formative evaluation of student progress.

5.4.2 Classroom Operation and Practice

As is the case everywhere, there is a considerable difference between what the syllabuses indicate should be taught (and how) and what is actually taught (and in what way) in the primary school.

The most frequently observed classroom methodology is the traditional lecture format, which most teachers experienced as students. The teacher's main responsibility is to insure that all of the information is presented, trying to make sure that it is repeated a sufficient number of times to meet the needs of all the students. Since the teachers are preoccupied with presentation, they insist on and reinforce passive behavior in the students (discipline is a frequent topic among teachers!). The tests are almost exclusively of a summative nature, emphasizing how much of the presented information has been retained. Testing for immediate feedback occurs rarely. There is a strong tendency toward rote learning. Given that there are three critical exams which determine further progression [Primary School Leaving Examination (PSLE), Junior Secondary Certificate (JC), and Cambridge Overseas School Certificate (COSC)], heavy emphasis is placed on teaching and preparing for the test. (This approach--or model--is prevalent in many other countries, of course.)

Obviously the degree and manner in which the teachers are able and willing to implement the syllabuses is critical. All the best theoretical and practical work the Ministry and the subject panels can muster will be constrained by the realities of the classroom. For that reason comments will be made about what apparently goes on in the classrooms.

Mathematics is given primarily as "chalk and talk" with verbal presentation of the basic concepts to the students, the problem normally worked out on the blackboard by the teacher,

and then provision for some practice, prior to moving on to the next objective. Many of the teachers do not know how to use the inquiry and guided discovery approaches. Generally there is a lack of adequate practice of the mathematics concepts. Teachers are supposed to give additional practice and prepare additional materials such as charts, graphs, guides, etc., but that is not normally done. If the MOE staff do not provide the teachers with materials, the teachers rarely take the initiative to produce their own.

Science has many similar problems. The new curriculum syllabus suggests that the teacher take a "practical" experience oriented approach which stimulates the students to do experiments. The primary curriculum looks skill oriented, but is not. Teachers tend to do the experiments, demonstrating and explaining them to the children, instead of allowing the students to do them. This results partly from scarcity of materials and partly from lack of training and awareness on the part of the teachers. There are no science texts used in primary at this time, only the teachers' guides mentioned previously. Often teachers feel insecure about their own knowledge of a subject and therefore are reluctant to teach it. One survey showed that only 14 percent of the schools said they had all or most of the science equipment they should have while 46 percent said they had no materials or did not know what materials they should have (Primary Education Survey of 1982, PES, p. 21). To remedy this problem, the science curriculum staff is currently preparing primary science kits for distribution to all schools.

English training, during first four years, emphasizes learning to speak and understand the language. The methodology recommended by the MOE requires the development of vocabulary through active speaking and listening in small groups and in pairs. However, the low level of English proficiency among teachers, the lack of space in the classrooms, and the organization of the desks and tables all serve to discourage teachers, particularly those in rural areas, from changing

their approach. As a result, lecture and recitation formats predominate in teaching Primary One through Four English.

From Standards Five through Seven (and on to Form II) much more emphasis is placed on reading of English. However, the schools frequently do not have enough books to offer the students and they cannot expect the children to purchase the twenty-five or more books they should read. Further, the low levels of mastery of English by teachers mean they speak English only in class, with Setswana the form of normal communication. In addition, it has been suggested that the English syllabus is written at reading levels much too high (in some places at second year University equivalency) for the primary teachers, thereby reducing their ability to implement it. Testing data suggest that six hours per week is the optimal time for studying English.

Setswana as a subject is difficult to teach adequately. It is felt that the students tend to lose their capabilities in their native tongue, or only develop them partially, as they give way to the influence of English, Afrikaans, or non-Setswana African languages. This is more than simply a problem of communication. The way in which people think is involved. Thinking includes verbal (propositional) representations, images, episodes, and motor and intellectual skills representations. The participation of these forms of "thinking" are different from one culture to another, but verbal representation (propositional encoding and manipulation) is important in most modern cultures. The language one learns is not simply a mechanism for communication, but it also is a tool for thinking. If one does not adequately develop a code (language) for thinking, one's ability to reflect (as well as to express) will be limited. If students learn neither Setswana or English well, their future opportunities may be limited.

Social Studies is the third favorite subject of the students, after English and Mathematics. There are texts only for Standards One and Two with the possibility of one for

Standard Three during 1985. There are no texts available for this subject from Standards Four to Seven. However, TAPU has prepared some very interesting supplementary materials.

Apart from problems within specific subject matters it is possible to make several general comments about inadequacies or problems in the classrooms. Only 75 percent of the required number of texts are available. Most teachers have only two reference books to help them in their teaching and many have less than two. Thirty-eight percent of the teachers have less than five years experience. The proportion of unqualified teachers remains around 31 percent. In one survey only 42 percent of the teachers reported receiving workshop experience (during 1982) and 88 percent said they never or rarely had an opportunity to talk to their Education Officer.

Given that all subjects are supposed to be taught in English from Standard Five to Seven, it is interesting to note that 20 percent of Standard Five, 14 percent of Standard Six, and 11 percent of Standard Seven teachers reportedly have difficulty in expressing themselves in English. It has been suggested that only the basic presentation of information is done in English and that all elaboration, resolution of students' questions, applications to the daily life, etc., tend to be done in Setswana.

5.4.3 Achievement. There is a very low level of parental participation in the education of their children. Parents seem to be interested in good education for their children but because many students are achieving levels of education beyond those of their parents, the degree of help received at home is often minimal. The primary education survey showed that 69 percent of fathers and 63 percent of mothers had less than four years of schooling. Analysis of the results of the PSLE show a direct relation between parents' education and scores on the test.

Scores on the PSLE also are positively related to urban versus rural location, to the amount of time the student spends

on leisure reading, and to his/her favorite subject. Those students whose favorite subject is science have the highest scores, followed by those whose favorite is social studies. Students whose favorite subject is Setswana tend to have the lowest scores on the PSLE.

The problem of repeaters is particularly important. In principle, those students who repeat Standards Four and Seven should receive remedial attention. At Standard Four the central Ministry does not know who repeats - this data and remains in the school. Typically, however, students do not receive remediation but simply repeat the same class, with the same teacher, and the same text, and then retake test.

Repeaters at Standard Seven go through a similar process and their success rate on the PSLE the second time they take it is good, but their achievement rates in junior and senior secondary education tend to be lower than those of non-repeaters. Data from a ten percent sample of 1983 PSLE students shows:

| | N | Mean | S.D. |
|---------------|------|-------|------|
| Non-repeaters | 1933 | 49.15 | 8.68 |
| Repeaters | 890 | 51.90 | 7.44 |

31.5 percent of the sample were students who were repeating the test, and their scores are better than those who took the test for the first time. The repeaters, however, tend to be the students who had low B's and C's and few D's on their first attempt. Those who had many D's on their first attempt normally do not repeat the test, but simply terminate.

Of the students who took the COSC in 1983 (and who had taken the PSLE in 1978), only 14 percent had repeated the PSLE. The mean score for the eleven thousand students who entered Form I was 53.11, close to the 51.9 mean for the repeaters, which indicates that between 40 and 50 percent of the repeaters were eligible to go on to Form I. This suggests the necessity of examining the policy of allowing so many

repeaters to continue at the secondary level since their chances of success are not good.

5.5 THE NEW JUNIOR SECONDARY SCHOOL CURRICULUM

Secondary education has been divided into junior secondary schools (Forms I, II, and III), and senior secondary school (Forms IV and V). The area targeted for modification and improvement at this time is at the junior secondary level. Junior secondary has been changed from three to two years and is receiving a new curriculum supposedly integrated with the primary curriculum.

5.5.1 General Objectives

The major intent of the new junior secondary curriculum is to respond more directly to those students who will terminate their education at the end of nine years, by offering a more practical and less academic course of studies. The statement of the goals for the new junior secondary school course is that pupils should:

1. a) show knowledge and appreciation of Tswana culture, language, music, literature, arts, crafts and traditions;
- b) demonstrate an ability to take an active part in cultural activities based upon this knowledge and appreciation;
2. a) understand English and use it appropriately, both as a medium for learning at school and as a vehicle of communication beyond the school;
- b) demonstrate a desire to practice reading and writing skills by a voluntary selection of reading materials related to school and out-of-school activities, and to write independently about matters of personal interest to them;
3. a) apply knowledge and imagination to identify and simplify real-life problems arising in household management and everyday commercial transactions;

- b) show mastery of basic mathematical concepts that can be applied to more advanced mathematical studies;
- 4.
- a) make, check and record accurate observations of the natural world;
 - b) make and justify reasonable guesses that may explain what has been observed;
 - c) be aware of and identify science information that shows appropriateness of the guesses;
 - d) identify and apply scientific concepts to test the explanations;
 - e) apply scientific concepts and skills to the physical environment of Botswana;
 - f) draw general conclusion from specific activities in science learning;
 - g) demonstrate an attitude of readiness to change conclusions in the light of later discoveries or experience.
5. Demonstrate an awareness of Botswana's place in Africa and in the world by applying knowledge of the relevant features of civics, economics, geography, history, international relations and social structures as they relate to Botswana, Africa and the world.
6. Effectively use commonly needed tools and instruments in activities connected with later studies and out-of-school occupations. The following will be the major goals in practical subjects:
- a) acquire knowledge and skills required in food production for self-reliance, self-sufficiency and rural development;
 - b) appreciate climatic and ecological conditions prevalent in Botswana;
 - c) acquire knowledge of running a home and skills in balanced nutrition;
 - d) acquire skills in industrial arts with specific emphasis on the use of locally available materials as, for example, could be the case with basketry.

7. Use their existing skills and knowledge to extend their expertise in at least one area of the curriculum that especially interests them;
8. Assess their own achievements and capabilities on the basis of the knowledge and skills they have acquired at school to seek appropriate employment or further education;
9. Demonstrate the wise use of the mind and body for purposes that are socially and ethically acceptable. This implies, among other things:
 - a) a healthy mind in a healthy body;
 - b) personal hygiene and precautions against illness;
 - c) physical fitness and control of bodily movement;
 - d) readiness to work or play as a member of a team;
 - e) self-restraint and self-discipline;
 - f) unforced consideration for others - the basis of good conduct and good manners;
 - g) inventiveness in doing or making things that please and help others;
 - h) refraining from hurtful or wantonly destructive behavior;
 - i) putting social, spiritual, artistic, intellectual, athletic and other talents to good uses, and neither hiding or wasting them;
10. Adapt to social, economic and technical changes by adjusting acquired knowledge to new situations as they occur and take appropriate action.

5.5.2 Subject Areas

The junior secondary curriculum (in the Nine-Years' Basic Education Programme) will be built around a core of five subject areas:

English,
Mathematics,
Integrated Science,
Setswana,
Social Studies.

The MOE feels that this new programme offers considerable scope for innovation in the subject areas, particularly in Setswana and Social Studies where serious attempts will be made to depart from the rather academic approach of the past (which often bore no relation to the environment of the Batswana child) to incorporate more relevant and imaginative aspects. In addition to the core areas optional subjects will be offered, including: Agriculture (which may be moved to the core curriculum), Home Economics, Art, Technical Studies, Religious and Moral Education, and Physical Education. New curriculum syllabuses are being prepared in all of these areas.

5.5.3 Development, Review, and Evaluation Process

The general process which has been followed to prepare the new junior secondary curriculum (and which is the same basic process used for the development of the primary school syllabuses) is a traditional approach. The first step is the naming of a subject matter panel, which is composed of educators from throughout the country with interest or expertise in the specific subject and also includes parents and community leaders.

The panel then decides the general outline of the subject matter and normally examines a range of existing texts to see what they include. Then the panel begins to write the syllabus, in draft form, placing considerable emphasis on the national needs, that is to say, insisting that the curriculum be appropriate for Botswana.

As the draft syllabus is progressing, attention is paid to organizing it so that it will be optimally useful to the teachers in the classrooms. Frequently the panels assign certain sections or topics of the subject matter to members of the panel to elaborate and bring to a subsequent meeting where these submissions are then analyzed and combined by the panel.

Once an organized draft of the syllabus has been completed it is copied and sent to twenty trial schools (at least in principle) where it is tested for one year or less. During

that year the panel members and MOE staff make visits to the schools to see how the implementation is proceeding. After the trial period, a workshop is held, attended by all of the teachers who have participated and by the panel members. During two or three days the teachers' reactions are analyzed, paying particular attention to suggestions, improvements, modifications, deletions, etc.

Then the syllabus is rewritten to include the feedback and is prepared in a final form. The document is still considered a draft, but it is printed and distributed to all the subject matter teachers in the country. Once the syllabus has been developed, work is begun on the teachers' guides which are critical for the interpretation and implementation of the syllabus.

In the case of the new junior secondary curriculum the one-year tryout period will not be possible. The syllabuses are just now being finished and must be in use by January, 1986. Since they will be printed by the Government Printing Office, and that process frequently takes as much as six months, tryouts must be very limited and may be precluded altogether. For that reason the Education Officers of the Secondary Department have been stressing that the syllabuses will still only be in draft form for 1986 and that the EOs will be eager to receive comments and suggestions. Also, a formal attempt will be made to organize the gathering of teacher reactions to the syllabuses.

Sometimes the syllabuses are prepared with an existing text in mind, sometimes with no text in mind. For example, English has been prepared with the Secondary Education Project text as the basis for the syllabus. There is a clear recognition that the text does not cover everything and therefore supplementary materials will play an important role.

5.5.4 Status of Preparation

5.5.4.1 Syllabuses. By late April of 1985 new syllabuses had been prepared in final or semi-final form in

eight subjects. Details of the syllabuses follow.

English has the complete syllabus written. The basic approach has been:

- to choose the content directly related to English mastery, and
- to choose vocabulary that will be necessary for learning other JS subjects (particularly science and mathematics). In this second case, the English officers have had to decide what words are important because they did not receive inputs from the other subject matters OEs.
- to match a and b with existing texts to see which one is most appropriate.

Consistent with the changes in the new junior secondary programme (one less year, more practical, lower average level of entry behavior) topics or activities that were considered too difficult or inappropriate were eliminated from the syllabus. The emphasis is on English for students who will terminate their education after Form II, not on those who will go on to senior secondary education. The JC exam will be based on the junior secondary syllabus, not on the senior secondary Cambridge exam. There is hope that the CDE unit will prepare diagnostic tests.

The syllabus suggests that the first term be dedicated to diagnostic work seeking to discover the strengths and weaknesses of individual pupils, and remedial work seeking to correct defects and to remedy earlier omissions. (This suggestion holds true for all subject matters.)

The two general objectives for English are:

- to develop the students' skills in understanding and using spoken and written English, both as a medium for learning within the schools and as a vehicle for international communication beyond the school, and
- follow courses, course-material, or instructions presented in English, and use English (when necessary) to help them to earn a living.

These objectives are then divided into six sub-sets of objectives which are functions, listening, speaking, reading, writing and communicating. It is difficult to understand the differences between functions and listening, speaking, reading, and writing, just as it is not clear how communicating is different from speaking and writing.

These more-or-less general objectives are then expressed as skills, such as:

- should be able to show that they have understood the gist of what was said by a speaker with a good command of English, at a speech rate not below the lower range of what is normal in everyday conversation;
- make themselves easily understood by teachers, or by strangers, who are themselves proficient in English and who may be native speakers;
- adapt their manner of speaking to the person or persons they are speaking to;
- show understanding of texts they have read silently at a speed of at least 200 words a minute;
- demonstrate understanding of the plain sense of a text, the relations of various parts of a text to one another and to the text as a whole, and a text's more obvious unstated implications;
- write sequences of correct sentences which convey their meaning as economically and effectively as possible;
- vary the structure of their sentences so as to avoid monotony and the unnecessary repetition of words or ideas;
- practice, from the outset, understanding samples of spoken and written English which are clearly relevant to their own lives and circumstances.

The English curriculum is based on the Secondary English Project for Botswana, Lesotho, and Swaziland (known as SEP), published by Longman. This text was written by Roy Bevan and Neville Grant. Bevan had been an English Education Officer in Botswana for several years so that his experience was considered important in ensuring that the text was appropriate

to national needs. It was produced originally in West Africa but has been adapted to Botswana needs.

All children will have to purchase texts; since a wide variety of material is required in order to build reading skills there will be some economic pressure on parents. Children should read twenty-five books in two years; this requires good libraries and these either do not exist or there are not enough library books to meet the expected demand.

One problematic area is deciding how to teach reading in the classroom. Many teachers come from cultural traditions which do not emphasize reading and literature. This new programme does stress reading so there may be some clash with teachers' attitudes.

Social Sciences at the junior secondary level combine four previous subject areas into an integrated package. The four are history, geography, civics and environmental studies. A draft syllabus exists. The integration problem was reported as being quite complex but it was done through the subject matter panels. Those responsible are now working on a teachers' guide for the syllabus. Once they have a draft they will organize a seminar for teachers on the new syllabus and guide.

The new text will be published by MacMillan, who will use Botswana teachers as some of the writers in order to ensure national inputs and to increase local identification with the text. The draft version that is available does not include overall general objectives. The authors of the syllabus claim that it has an intellectual skills orientation; this is partially true in that many objectives are worded to stimulate student activities, e.g., "To encourage students to collect information and process data . . .," or, "To encourage students to find out more about the origins of Botswana and other peoples." This orientation could be strengthened considerably through application of taxonomic and task analytic procedures and the presentation of the objectives in terms of student behaviors instead of teacher behaviors. The students are supposed to learn how to manage data, maps, etc., and develop

certain attitudes (good citizenship, cooperation, helping others, responsibility, self-reliance, etc.), but the overall coherence and integration of these behaviors is not adequate.

All students are expected to have their own text (these are available at a cost of between 5 and 7 Pula). The text will use the case study approach. The authors of the syllabus suggest the need for much supplementary material but do not think it can be prepared in the immediate future. They think that the initiative will have to be taken by the CDU and suggest that teachers might be able to help develop materials if the Education Centres are built. They are aware of the importance of inservice teacher training in the subject matter and the possibility of regionalizing the training programme to improve coverage has been mentioned. In principle the initial training activity will be for department heads who will then train their staffs. Coordinated inservice training (with other subject matters) has not been considered.

The Mathematics syllabus has been re-written and distributed as a nine year programme. Initial evaluations indicate that it lacks sufficient depth. This is due, in part, to an acknowledgement of the limited background of many teachers in mathematics, and, in part, to the difficulty of integrating previous syllabuses which were designed for distinctly different sets of students. For instance, the first seven years covered by the new syllabus still contains many topics appropriate for students who would terminate their education at the end of primary. At the same time, the material previously covered in three years of junior secondary school has been condensed into two years. Clearly, over time, more rigorous selection of topics is necessary.

The main topics taught across the nine years are:

- sorting, classification, and sets;
- numbers and operations;

- fractions and decimals;
- measures;
- time;
- money;
- pictorial representations;
- geometry; and
- algebra (Standard Two through Form II).

One regrettable change should be highlighted. While Standards One to Seven had objectives written in terms of observable student behavior, the new nine-year syllabus has reverted to a topic outline form which gives statements of contents (that will be presented by the teacher) and notes regarding methodology. This change in emphasis is inappropriate.

The Mathematics staff feel that it is not possible to change the syllabuses too frequently because the teachers won't make the required changes at the classroom level. Improvement has to be made with only minor changes each year, not major ones.

The new syllabus does not have a second part that the old one had which was called "Additional Maths," and which was a way of getting more Math into the curriculum and of taking an extra test on the JC. It is not included in the new syllabus because it was oriented toward further academic study. The assumption of the new nine year programme is that most students will terminate at Form II and will not need the additional academic material in their practical daily lives.

In Mathematics the text contract is to MacMillan, which means working with an existing text, called the "project" text. But MacMillan will begin working with the panel on a new series of texts.

The new syllabus will be disseminated through teacher workshops. In the past these workshops have been designed to teach and stimulate the teachers to develop their own supplementary materials. In the future they may be directed toward teaching proper methodology as that is a major problem area also. The intention is that the teachers lead the

students to discover processes in the work, not just tell them the contents. The goal is to achieve active participation of the students in solving problems and give them more practice with concrete problems which will be meaningful to them in their daily lives.

Science has a semi-final draft syllabus with the final to be ready in May, 1985. The syllabus has been built upon the primary syllabus. It does not achieve perfect integration, but it is hoped that it will be possible to do so within a few years through a process of minor adjustments. It is felt that teachers of Form I and II cannot rely on good entry skills because although the primary syllabus is sound, the quality of teaching is variable. On average, teachers are not well-grounded in the content and, therefore, do not like to teach science and there is a widespread shortage of equipment.

The general goals for the two years of Science include:

- The pupils should learn how the human body functions. They should be made aware of health problems and be given guidance on how to live in a healthy way. They should have knowledge about the main diseases in Botswana, how they are spread and how to prevent them, should be encouraged to develop healthy habits, e.g. the risks of using tobacco, drugs and alcohol should be discussed.
- Pupils should be familiar with common plants and animals in Botswana. The pupils should know something about how nature functions; the dependence between animals and plants; how man interferes with nature. Pupils should have knowledge of how nature can be of use to man, and at the same time be made aware of our responsibility of conserving natural resources and of guarding against pollution.
- Pupils should be given some information on what matter is made of and how matter reacts. Pupils should be made aware of how this knowledge can be used to improve our living conditions, and also the risks involved.
- Pupils should have some knowledge of technological development and how technology can change our way of living. Pupils should learn about technical appliances used in the home and at work.

The new syllabus is supposed to be skills oriented. It says, "The syllabus is a pupil-centered syllabus with a large and essential component of practical work in a laboratory or science room making maximum use of easily available low cost material. It utilizes the discovery method to transfer useful skills and knowledge to the pupils."

An analysis of the Form I (8th year) objectives shows heavy emphasis on verbal information, as was seen in Standards Six and Seven. Year eight in the existing draft contains a total of 70 objectives of which only one is in the attitude domain, forty-nine are in the verbal information domain, ten are intellectual skills, and ten are a mixture of verbal information and intellectual skills. Since, this emphasis reflects the current examinations, it is unlikely to change until the exams are revised.

Successful implementation depends a great deal upon providing support for teachers through inservice training and additional materials. All the ideas in this "integrated" Science syllabus have been taken from the Botswana environment. (The old secondary Science syllabus was based on a modification of a Scottish curriculum.) In the new syllabus emphasis has been placed on practical experiments with worksheets for the student to record their results.

The text currently in use is Boleswa Integrated Science, by Heinemann Educational Books (London), published in 1978 and 1979 (prior to the new project). It is designed for use with the 1974 syllabus that will be used for the last time in 1985. Among other problems, the language level in this text frequently is beyond that of the students, reaching as high as fourth year college in some points. Also the texts have a strong academic orientation. The MOE staff consider the new syllabus to be much more relevant to everyday life.

Integration among Science, Social Studies, Mathematics, and English is very limited but initial steps toward coordination have been made. There is no possibility of achieving integration for 1986, but by 1987 and 1988 progress

should occur. As an example, "family life" is a topic which is supposed to be covered in all subjects, and could serve as a focal point for integration. It will be a required and tested secondary subject in 1986. Unfortunately at the primary level, many teachers do not want to teach the topic of birth control within Family Life; therefore Family Life remains an optional subject at that level. Since optional subjects are not tested, they are rarely taught. Thus, the primary curriculum is unable to take advantage of an obvious subject area that lends itself to an integrated curriculum.

Supplementary materials in Science, as in other subjects, are prepared by experienced teachers during writing workshops. Two writing workshops were held in 1985. Training in new content and methodology is conducted during separate inservice courses. Two of these were also held in 1985. It is hoped that in the future even greater emphasis will be placed on teaching proper methodology as well as content.

Setswana has a draft syllabus that has been reviewed by the subject panel and dispatched to the teachers for their opinions. The basic objectives are to improve the students' ability to communicate and to speak, read, and write their native language more effectively. It is hoped that students will be able to engage in creative expression in their language.

The subject panel is aware of the problem of the inadequate vocabulary in Setswana for Science and Mathematics. Also there are serious problems in determining the correct approach to teaching Setswana. It is a spoken language which has gone through a period of searching for academic respectability. This process placed too much emphasis on the development of grammar versus vocabulary.

Physical Education has a draft syllabus for the nine-year programme, which has been approved by the panel. Form I and Form II syllabuses have been in existence since 1984, and are being implemented. The drastic expansion of Form I has

complicated the ability of the teachers to respond to demand.

The general objectives for junior secondary education are:

- total development and physical fitness;
- increasing movement skill range and accuracy;
- socializing the individual;
- increasing knowledge, favorable attitudes and appreciations; and
- fostering better use of leisure time.

The Art syllabus is said to be in final form although it may require further revision. This is the first time an art syllabus has been done and it is not at all behavioral. Its verbs are "make aware," "familiarize," "help develop," and "expose," all of which are telling verbs. This may not be bad, but it certainly allows for a great deal of ambiguity in the teaching process.

The syllabus for Technical Studies was drafted in January 1985 and revised in August of that year. The syllabuses for Agriculture and Home Economics are currently being developed.

In the case of Religion, the draft is currently being reviewed by the joint primary and secondary panels in order to insure a smooth transition through the nine years.

5.5.4.2 Teachers' Guides. Once the syllabuses have been prepared they serve as the basis for the preparation of the teachers' guides. These documents have as their major purpose support of the teacher in implementing the syllabus in the classroom. Since the syllabuses have been finished only recently, the development of the teachers' guides is just beginning. It is assumed that they will be finished before October, 1985. If the teachers' guides are not developed quickly, the implementation of the new syllabuses will be weakened.

The social studies panel is working on a draft of the teachers' guide. After finishing the draft they will hold a workshop with the teachers to present the draft, gather ideas, explain the nature of the new curriculum, etc. In English, the teachers' guide has just begun to be prepared and will be developed in a form similar to that of Social Science (through drafting, consultation with the teachers, redrafting, etc.).

The guides already are being developed in Mathematics. The new syllabus and the guide will be communicated to the teachers through workshops. It is important not only to explain it to the teachers but to get their inputs, listen to their ideas, create a climate of consultation, talk about amount of practice needed, etc. The preparation of Science guides is scheduled to begin soon. Along with the teachers' guides some resource books are being prepared to help the teacher with the presentation of the subject. This is particularly important in primary science where the lack of a text makes it difficult for the teacher to proceed. Additionally, these resource books are used in Secondary Science as a way of standardizing the curriculum to ensure that all teachers place the same emphasis on concepts. For these reasons a series of pamphlets covering 13 topics is being developed (for the primary level), with 35-40 pages each. The two already prepared are on weather and seasons and on water. These will be made available to the teachers, and hopefully to the teacher training institutions.

The status of teachers' guides in other subject areas is less advanced. Some areas, of course, must await completion of the syllabus before the work on the teachers' guides can commence.

5.5.4.3 Supplementary Materials. Education Officers and curriculum staff in the MOE feel that few textbooks are self-supporting and that all require the development of supplementary materials in order to adjust contents (and methodology) to Botswana needs and characteristics and to

amplify or broaden the material available for improved learning and generalization. Historically, the textbooks used have not been sufficiently complete to cover all areas and provide adequate practice. In other cases, textbooks have not existed at all.

In the case of Social studies it is felt that supplementary materials will be very important particularly in the period in which MacMillan is preparing new texts. The Secondary Education Officers suggest that CDU will have to take the lead in the development of these materials.

In Science the new syllabus is much more relevant to everyday life. New textbooks will be required. The possibility exists of simplifying the existing text while beginning the preparation of the new texts. In the meantime supplementary materials are being prepared. Staff have received a UNESCO training workshop in how to prepare low cost materials and in January, 1985 eight groups of teachers were working on ideas for the syllabus and drafting new materials for the first two terms. Four packages are planned, of which two are now in a semi-final draft.

In Mathematics some supplementary materials are being prepared and some that were used previously are being modified for use in the new programme. In English, materials to supplement the SEP texts are being planned but preparation has not yet begun. Plans are also underway to prepare supplementary materials for Physical Education and Art.

The status of supplementary materials is not known in Religion, Setswana, Home Economics, Agriculture, and technical studies. These are the areas which do not have completed syllabuses, so the lack of information about supplementary materials is understandable.

Figure 5.5 gives a brief summary of the status of the development of syllabuses, teachers' guides, texts, and supplementary materials (as of May, 1985).

FIGURE 5.5

BRIEF SUMMARY OF PROGRESS ON DEVELOPMENT OF COMPONENTS
OF THE JUNIOR SECONDARY CURRICULUM

| Components \ Subjects | English | Science | Social Studies | Setswana | Mathematics | Religion | Home Economics | Physical Education | Agriculture | Technical Studies | Art |
|-------------------------|-------------|-----------------|--------------------|-----------|--------------------|-------------------|-------------------|--------------------|-------------|-------------------|----------------------|
| | Syllabus | written | semi-final draft | written | draft in process | written & printed | draft in process | being drafted | written | in process | being drafted |
| Teachers' Guide | in process | to begin in May | in process | not known | in process | not yet | not yet | in process | not yet | not yet | included in syllabus |
| Text | SEP | | will be contracted | | will be contracted | | will use existing | none | none | none | none |
| Supplementary Materials | in planning | in process | not yet begun | | some planned | | | some planned | | | some planned |

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5.5.4.4 Manufacture, Distribution, and Costs. Texts generally are manufactured by external publishers. In the case of the new junior secondary programme that will most frequently mean MacMillan. The manufacture is not an MOE responsibility; once the subject panel has come to an agreement with the publisher the MOE management responsibility is complete.

For the 1985 school year the Ministry of Lands and Local Government provided a supplement or stipend of twenty Pula for each student in each primary school. A specific document, 1985 Primary Schools Supplies Requisition Forms, was given to all head teachers with an explanation of how to calculate the amount of money they would require for their school and instructions on how to choose texts, spirit duplicators, plastic coins, duplicating material, chalk, etc. It is not clear how much assistance or supervision the head teachers receive in this process.

At the new junior secondary level each school will receive a stipend of forty Pula per student from the Ministry of Education. Information on how this will be administered has not been made available. The clarification of this process is important because at the junior secondary level students must purchase several texts. In rural and urban poverty areas this may cause hardships on families and lead to lack of a reasonable number of texts.

Distribution is a more critical problem as there are frequent problems in establishing responsibilities between the two ministries (Education and Lands and Local Government) concerning who must get materials to the schools.

5.5.4.5 Diagnostic and Achievement Tests. Certainly one of the critical aspects of the successful implementation and periodic modification of any curriculum system is the existence of some form of diagnostic evaluation, some ongoing formative evaluation and a periodic achievement evaluation. In the current primary and secondary systems (which compose the

new nine-year program) only periodic, summative evaluation exists.

Formative evaluation is not an institutionalized or typical form of providing students with feedback on their progress. In the primary years, in the current system, the two major tests are given at the end of Standards Four and Seven. In both cases the tests are given for summative reasons - to determine what the student has learned to that point and to eliminate those who have not learned enough, obligating them to repeat the year or terminate. Even the repetition process is not truly formative. According to available information, the students simply repeat the year, frequently with the same teacher, the same texts and supplementary materials, for the same number of hours.

At this point a plan for continuous assessment has been proposed, but progress is slow. A continuous assessment programme has been proposed by the Joint PTT and CDE Committee on Examinations (September, 1984). The primary function of this programme would be to enhance the learning experiences of students and assist them in making choices and taking responsibility for these choices, as they mature both intellectually and emotionally.

The basic idea is to provide:

- continuous assessment from the teachers/schools;
- provide diagnostic testing for particular learning difficulties;
- offer nationally based achievement measures to provide schools and districts with information regarding their education programmes;

and as a means of national monitoring to develop and apply:

- interest measures to assist students in planning appropriate coursework and further educational/training experiences;
- and selection tests for entry into further programmes.

This is an important proposal which would be critical to the appropriate development of the new nine year programme. The flexibility envisioned for the new programme includes school choices depending on location, facilities and staff, teacher choices depending on skills, capabilities and interests, and student choices based on educational progress and interests.

In the past, attempts at continuous assessment have met with little success. Lack of information about the purposes and usefulness of continuous assessment was one important constraint. Training in preparation of instruments is not the only problem. The provision of diagnostic test information presupposes the capability of using information for designing special teaching approaches, individualization, etc. The time and training needed to provide teachers with the needed skills to perform their role as it is envisaged is a major consideration and constraint.

While the need for such a system is clearly recognized, it is felt that such a programme is still a number of years in the future. A short term programme has been proposed for evaluating the nine year programme. The objective-based programme would develop measurement devices based on:

- learning objectives established for the core subjects;
- attitude elements in the objectives;
- existing questions used in past primary leaving and Junior Certificate examinations to form a bank of questions and situations for use in assessment;
- development of a large number of new test questions and situations both to meet new learning objectives and levels of capability and to measure learning in areas that have not been measured before;
- an extensive programme of trial and field testing to investigate the value of the new assessment approaches;
- training programmes for the teachers in the objectives of the new programme, formats for recording teacher assessments of students' learning needs, etc.

This programme would develop specific assessment techniques for each of the core and optional subject matters, developing forms of assessment that are closely related to the objectives of the syllabuses.

A reasonably detailed plan for this activity has been developed by the Regional Testing Centre through the Joint Committee on Examinations. Also, the Sub-Committee on Continuous Assessment has been authorized to begin the development of a specific plan for this area. It is a very difficult task with a doubtful future if more personnel are not allocated to it.

5.6 SENIOR SECONDARY SCHOOL CURRICULUM

The senior secondary schools develop their curriculum directly in relation to the requirements of the Cambridge Overseas Schools Certificate (COSC). The COSC program publishes syllabuses for the various subjects from which the schools choose their textbooks and model their programmes. Thus, this level of schooling is strongly influenced by the testing agencies.

For the COSC examination, the subjects are grouped as follows:

- I. English Language (compulsory subject).
- II. General Subjects: Literature in English; Bible Knowledge; History; Geography; Economics; Classics in translation.
- III. Languages: Latin; Greek; French; German; Spanish; Other approved languages (which includes Setswana).
- IV. Mathematical Subjects: Mathematics; additional Mathematics.
- V. Science Subjects: Agriculture; Agricultural Science; Physics; Chemistry; Biology; Human and Social Biology; Science (Physics, Chemistry); Science (Physics, Biology); Science (Chemistry, Biology); Science and Integrated Science; Combined Science.

VI. Arts and Crafts: Art; Music; Woodwork; Metalwork; Metalwork (Engineering); Fashion and Fabrics; Food and Nutrition; General Housecraft.

VII. Technical and Commercial Subjects: Engineering Science; Surveying; Mechanical Drawing, etc.

All candidates for the school certificate must enter and sit for at least six subjects. These must include English and subjects chosen from at least three of the other groups.

To receive the school certificate the candidates must:

- a) Reach a satisfactory general standard as judged by their performance in their best six subjects, and either
- b) pass in at least six subjects (including English) with credit in at least one of them, or
- c) pass in five subjects (including English) with credit in at least two of them.

This strong control by external tests has the effect of assuring that all senior secondary courses are taught from the syllabuses, normally with English language texts (except for Setswana or French). Each school may choose its own texts. In Botswana more students choose Geography than History as a subject area because of better job possibilities.

In 1985 twelve schools offered Physics and Chemistry as separate subjects within the Science area, and all seventeen of the senior secondary schools offered Biology as a separate subject. This separation of Physics and Chemistry is considered an important step in improving the Science curriculum. Nine schools continue to offer a Science course which includes both Physics and Chemistry in the same course, seven schools offered a combined course which treats all Sciences, and sixteen schools offered Human and Social Biology. Human and Social Biology is considered to be at a lower level than the other science courses; however, it is not necessarily considered easier to teach.

5.7 CONCLUSIONS AND RECOMMENDATIONS

5.7.1 Conclusions

The new junior secondary curriculum, and more appropriately, the proposed new nine-year programme, is a laudable, interesting, and innovative curriculum effort. It shows a clear intention to base the Botswana education in a new national framework, more closely representing national characteristics, necessities, and interests. The desire to make a more practical education, to bolster those contents and skills which will help Botswana youth to be more self-reliant, more immediately employable, more appreciative of the Tswana culture and of Botswana's place in Africa, more socially adaptive and more aware of their needs to be responsible for their personal health, reflects a perceived need to orient education more directly to the national context (consistent with the first principle of curriculum, mentioned in the introduction).

The process of selection of content (knowledges, skills, attitudes) and the criteria for that selection have been based in the desire to make education more effectively reflect national values, while not breaking altogether with the academic subject matter orientation inherited from the colonial era. The selection process has been critical and complex. The question of how and what to select, what to leave in and what to take out, has been a difficult one. The desire has been to make the curriculum more relevant and practical without sacrificing quality. How was this to be done? Presumably by studying, investigating, and sensing the national character of the Botswana youth and their current and future needs. This has been done through the curriculum panels and through the expertise and common sense of the Education Officers (primary and secondary) involved in the effort.

The basic result is good; it is a solid base upon which to continue to develop curriculum. Two principles should be recognized: a) the current result is not perfect, has not fully

met the goals, and b) curriculum development should continue to be considered a dynamic and continuous process, not a static "syllabus" changed every ten or fifteen years. The new nine-year programme must be seen as "enroute," as dynamic, as subject to continual improvement.

The contents are good but may be improved through more careful analysis of their structure and relations. The application of relatively new techniques such as taxonomic analysis, behavioral analysis, learning hierarchy analysis, structure analysis, and the general methodology of instructional systems design, could improve distribution, structure, and relationships considerably between and among subject matters and within specific groups of objectives. The tendency to state objectives in terms of teacher behaviors and content or topic outlines has been mentioned and should be changed. One important step for the nine-year curriculum would be to state all objectives in terms of student behaviors - what they will be able to do, say, express, resolve, invent, create, etc.

Closely related to statements in terms of student behaviors is the necessity of improving balance in terms of kinds of behavior. While the general objectives and philosophy emphasize attitudes and skills, many of the syllabuses emphasize verbal behavior. There is too much verbal behavior, too little emphasis on intellectual skills, too little development of attitudes and positive habits, too little emphasis on motor skills, and certainly a lack of development of cognitive and affective strategies, metacognition, and affective awareness. Steps should be taken to increase the number of objectives in the domains of intellectual skills, attitudes, and cognitive strategies, in the existing syllabuses. In close relation to this suggestion, it would be useful to investigate the nature of the Batswana cognitive and affective learning and thinking "styles" in order to take advantage of them rather than to teach in forms which may be incompatible with them.

As part of the effort to improve statement and type of objectives, it will be important to look at the integration of subject matters. Notwithstanding good efforts, the integration within subjects (from first through ninth years) is not adequate, particularly in certain subject areas, and the integration between subject matters (Science with Mathematics with English, etc.) is certainly weak. Coherence within a subject matter (over the nine years) and between subject areas will help new knowledge in one area to strengthen knowledge in others. This would have a positive effect on the future transfer of understanding and on the degree of meaningfulness the education has for the student.

The fifth principle of curriculum which was mentioned in the introduction is the development of methodology which is consistent with content, structure, and purposes. The stated intent to use child-centered, discovery, and inquiry approaches which are supposed to teach the children not only the basic information they need, but also to teach them intellectual skills and to give them strategies with which they may search for information in future situations in their lives, is certainly laudable. But classroom reality is noticeably divorced from those goals. The teachers do not have sufficient training in their subject areas. They do not have an adequate infrastructure to accomplish what they are requested to do.

The problem requires close examination not only of preservice and inservice training, but of the various parts of the whole education system. The philosophy per se is quite good, but it may be too far ahead of the capabilities of the system. The long history of teaching academic verbal information in order to pass examinations which basically require verbal information (and a few intellectual skills, and lots of algorithms) cannot be changed overnight. There actually is a distinct degree of incompatibility between the new philosophy and the historical tendency to teach information for future tests. This incompatibility is most obvious at the methodological level although it permeates pervasively

throughout the education sector. Training is required at all levels, but more than that the new philosophy has to be communicated to all sectors (teachers, head teachers, parents, teacher trainers, university professors, administrators, etc.) and they must begin to develop some sort of serious commitment to the philosophy. Guided discovery learning, at differential rates, with active learning that is a challenge to all children while at the same time remaining relevant and meaningful; that is systematically evaluated; that recognizes the diversity in the nation, will require not only a competent, secure, flexible, reliable, knowledgeable, creative and motivated teacher, but a Ministry of Education and school system that has the same or even more advanced characteristics.

Evaluation, the sixth key principle in curriculum, is another critical element which seems to be anticipated at a theoretical level but not yet adequately practiced. A continuous assessment programme (that might also be called a formative evaluation programme) should be developed as rapidly as possible. This implies much work for the RTC as well as training of teachers and headteachers.

Consistent with the general philosophy and with the notion of a continuous assessment programme, it might be feasible and advisable to begin incorporating mastery learning concepts, particularly after 1988. This would reduce the tendency to teach for the test; it also would make milestones more frequent, more flexible and of a different nature than those of the existing tests (repetition of tests in a mastery approach is not a negative event). This approach is also consistent with the educational philosophy of the MOE and with the principles of instructional systems development which have been suggested earlier in this document.

5.7.2 Recommendations

Several recommendations can be made on the basis of the study and conclusions of this document. The following are not

necessarily in order of importance but rather compose a set of ideas, each of which is related to the others.

Recommendation Number 1. The MOE and the CDE and all participants in the curriculum development and implementation process should be actively aware of the need to conceive of this process as dynamic, constant, and iterative. Mechanisms should be designed, through the appointment of a national curriculum council, or some other entity, to insure active and continuing upgrading in the curriculum. Attention should be given towards ensuring that the syllabuses be considered, hand-in-hand, with the teacher's guides, textbooks, and other resource materials that have been produced for teaching purposes. Only then can it be assured that important considerations such as instructional objectives, teaching/learning methods, and other approaches have been adequately addressed.

Recommendation Number 2. The professional staff of the Curriculum Development and Evaluation Department must be increased and upgraded or the new nine-year program will fail to achieve its true potential. The lack of personnel in the CDE and particularly in the CDU is a critical point. A curriculum development unit should have at least one senior and two regular curriculum specialists for each of the seven core subjects, and one specialist for each of the optional subjects. Obviously, these people should be trained in the latest and best techniques of curriculum development and should be receiving constant updating in training. Also, they should be constantly sharing their knowledge and skills with other members of the educational system.

Recommendation Number 3. Broad scale training in curriculum development and instructional design concepts should begin immediately, for all professionals involved in the nine-year programme. While the people who are responsible for the development of the new junior secondary syllabuses have done a laudable job, modern methods of curriculum development, particularly those using an instructional systems approach,

have not been used in this process. Certainly the quality of the syllabuses could be improved significantly through the introduction and implementation of new techniques. This requires direct training of MOE personnel particularly in taxonomic analysis, learning hierarchy analysis, learning structure analysis, new approaches to the preparation of objectives, cognitive learning strategies, new methods of textbook design and development, formative evaluation techniques, affective variables in learning, etc.

In particular, people who are directly responsible for developing syllabuses should be provided with training in specific techniques of writing syllabuses which teachers can understand and use. This may imply more in-depth formative evaluation of syllabuses. To the extent possible syllabuses together with teachers' guides should be designed as stand-alone devices.

Recommendation Number 4. Preservice and inservice programmes should immediately begin to teach courses in educational philosophy, curriculum principles, formative evaluation, and methodological courses related to inquiry and guided discovery learning and other key aspects of the new philosophy. The methodological courses should be done directly within the subject matter (not taught as separate courses) and should not only teach appropriate methods but also employ those methods in order to provide sound teacher - models for students to emulate. Obviously, all of teacher preparation should be changed in such a way as to reflect the various elements of the new philosophy.

Recommendation Number 5. The continuous assessment system must be given high priority in terms of adequate staffing, staff training as needed, and resources. Failure to implement this evaluation system may seriously jeopardize successful implementation of the new nine-year curriculum.

Recommendation Number 6. There is noticeable lack of communication between the Ministry and its main constituencies, the parents and communities. Efforts should be taken to develop an efficient system for communicating changes in the curriculum and classroom practices, and develop support for these changes. Steps should be taken to establish a community communication function within the MOE which will have the responsibility and the resources to develop a full-scale plan for communicating intentions and stimulating support from community leaders and parents in general.

Recommendation Number 7. A limited but intense research study should be made concerning the nature of the Batswana cognitive and affective learning and thinking "styles" in order to take advantage of them, and to avoid teaching in forms which may be incompatible with them.

Recommendation Number 8. Steps should be taken to develop programmes which would stimulate parents to take a more active part in helping their children have success in school. This is particularly important in a transition period such as this where over 60 percent of parents have less education than their children. A number of innovative procedures might be possible, including enlisting head teachers' support, using distance education programmes, etc.

Recommendation Number 9. A systematic plan for the diffusion and institutionalization of more appropriate teaching methods should be developed. This plan should then be incorporated and implemented with a plan for more efficient channels of communications and transport. Certainly, the scarcity of personnel in many MOE units and the difficulties in field visits, examination of distance teaching methodologies should be fully explored.

Recommendation Number 10. Consistent with earlier comments the system should develop new techniques for remedial and corrective teaching, to help obtain a more constant flow through the system and reduce the psychological and economic costs of the repeaters at Standards Four and Seven.

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BIBLIOGRAPHY

- Academy for Educational Development and USAID-Botswana. "Needs of Industry for Management studies at Botswana Polytechnic," plus "Suggested Syllabus for a First Line Manager Introduction Course at Botswana Polytechnic," April 19, 1985.
- Bank of Botswana, Bulletin, December, 1984.
- Botswana Institute of Administration and Commerce. "Prospectus, Public Service Training," January, 1984.
- _____. "Prospectus, Secretarial Training," April, 1983.
- Cammaerts, F. A. Advice on Curriculum Development. Ministry of Education, 1981.
- Chihana, Chakufwa. "SATUCC Comments on Survey of Training Needs and Conditions of Work in Botswana, 1984." Southern African Trade Union Coordination Council, April 1, 1985.
- Crowder, M. (ed.) Education for Development. MacMillan Botswana, 1984.
- Donahue, John D. (editor). Cost-Benefit Analysis and Project Design. United States Agency for International Development, Training and Development Division, 1980.
- Evans, Max W. Annual Report, 1981-82: Primary and Teacher Training. Ministry of Education, 1982.
- _____. A Model for the Professional Evaluation of the Teacher Training Colleges of Botswana: A Report of a Consultancy. Ministry of Education, 1983.
- _____. Primary Education, 1980. Ministry of Education, 1980.
- _____. Report of the Professional Visits to the Teacher Training Colleges. Ministry of Education, 1983.
- _____. Selected Issues in Education in Botswana. Ministry of Education, 1983.
- Gottleben, V. and G. Rosch. Strengthening the Industrial Training and Trade Testing System of Botswana, Final Report. The Ministry of Home Affairs, September, 1984.
- Institute of Development Management. "Institute of Development Management, 1985 Prospectus," undated.

- _____. "Institute of Development. Management, Botswana, Lesotho and Swaziland, 1984 Prospectus," undated.
- _____. "Ninth Annual Report," 1983.
- Kelly, Ian. "Junior Secondary School Mapping." The Ministry of Education, April, 1985.
- Ministry of Education. Annual Report 1984, The University of Botswana, 1984.
- _____. "Basic Data, Secondary Schools 1976-80," December 1981 - July 1984.
- _____. "Botswana Education In Brief," September, 1984.
- _____. "The Development of Education in the Periods 1979-84 and 1985-90," February 27, 1985.
- _____. Education Statistics, 1983.
- _____. Education Through Partnership, Intermediate Schools of the Future, December, 1984.
- _____. Ministry of Education Goals and Objectives 1984-1991, September, 1983.
- _____. "Prospectus, Botswana Polytechnic," 1984.
- _____. "Secondary School Building Programme 1985-91 and CJSS Construction for 1986." (second draft), December, 1984.
- _____. Standard One Syllabuses.
- _____. Standard Two Syllabuses.
- _____. Standard Three Syllabuses.
- _____. Standard Four Syllabuses.
- _____. Standard Five Syllabuses.
- _____. Standard Six Syllabuses.
- _____. Standard Seven Syllabuses.
- _____. Department of Non-Formal Education. "Developments in Non-Formal Education in Botswana Since 1979," 1981.
- _____. Department of Non-Formal Education. "Non-Formal Education briefing Notes for Members of the National Assembly," undated.

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- _____. Department of Technical Education. Vocational Training Centres Project, 1984.
- _____. Education Statistics Unit. Education Statistics. Part I: 1983 Schools, Pupils and Teachers. Part II: 1983 Examinations, Expenditure and Miscellaneous, August, 1984.
- _____. The Planning Unit. In the Second Decade: Education In Botswana: A Graphic Look, August, 1984.
- _____. Secondary Department and Planning Unit. The Supply and Demand for Secondary School Teachers 1984-90, December, 1984, updated August, 1985.
- Ministry of Finance and Development Planning. Botswana Education and Human Resources Sector Assessment, June, 1984.
- _____. "Draft Macroeconomic Outline of N.D.P. 6."
- _____. Economic Forecast and Development Strategy. Chapter 2. The Economic Forecast 1985/86 - 1990/91.
- _____. 1985/86 Estimates of Expenditure from the Consolidated and Development Funds, undated.
- _____. Financial Statements, Tables and Estimates of Consolidated and Development Fund Revenues 1985/86, undated.
- _____. The Government Budget and the Allocation of Resources. Chapter 3.
- _____. Report on Evaluation of FAP, April, 1984.
- _____. Employment Policy Unit. National Manpower Development Planning, December, 1984.
- Ministry of Health. "The Permanent Secretary to the President's Circular No. 1 of 1984," March 15, 1984.
- Organization and Management Unit of the Directorate. "Ministerial Organization Study. Progress Report No. 5. Directorate of Personnel O. and M. Review," 1984.
- Otaala, B. and S. Pandey. Botswana Education in Brief. Ministry of Education, 1985.
- _____. Education Through Partnership. Ministry of Education, 1984.
- _____. Primary Teacher Training Colleges: Affiliation Handbook. University of Botswana, 1984.
- Pandey, S. and K. Kibera. Primary Teacher Education Curriculum. University of Botswana, 1984.

Pandey, S. and B. Otaala. National Development Plan, 1979-85.
Ministry of Finance and Development Planning, 1980.

_____. New Directions for Teacher Education. 1982.

_____. Ohio University Contract: Report 1, 1982.

_____. Ohio University Contract: Report 2, 1982.

_____. Ohio University Contract: Report 3, 1983.

_____. Ohio University Contract: Report 4, 1983.

_____. Ohio University Contract: Report 5, 1984.

_____. Ohio University Contract, Report 6, 1984.

_____. University of Botswana Bulletin, 1984-85.

Taylor, Lucrecia. "Economic Update, Botswana, 1984." U.S.
Agency for International Development, April 11, 1985.

The University of Botswana. University of Botswana Estimates of
Income and Expenditure 1985-86.

U.S. Agency for International Development. First-Line Manager
Induction Course Scheme and Syllabus/Botswana
Polytechnical, April 19, 1985.

U.S. Agency for International Development. "Junior Secondary
Education Improvement Project Paper," December 13, 1984.

The World Bank, Eastern African Country Programs Department,
Southern Africa Division. Botswana, Country Economic
Memorandum, November 21, 1984, 1984.