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FINAL REPORT

VOCATIONAL EDUCATION ASSISTANCE/
PORTUGAL

ARDEN LAMPEL
VICTOR MEDEIROS

SUBMITTED TO:

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT/LISBON
AND
GOVERNMENT OF PORTUGAL/MINISTRY OF EDUCATION AND SCIENCE

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GROUP SEVEN ASSOCIATES, INC.

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ABBREVIATIONS

MEC	Ministry of Education and Science
MOL	Ministry of Labor
G7	Group Seven, Inc.

A. Summary of Observations

- A.1. The MEC seeks to establish an intensive vocational education option for 12th year students as part of its planned substitution for the Propedêutico year.
- A.2. Twenty-eight different courses of instruction are in preparation. Statements of objectives for each course and an outline of topical headings to be included have been prepared. Work is now underway for further elaboration of the course content.
- A.2.1. Thirteen of the objectives/content outlines were reviewed by the G7 specialists together with the MEC coordinators assigned to carry out the work (See Annex I).
- A.2.2. Little evidence of manpower data establishing need was found in the selection of programs to be offered.
- A.2.3. Most of the objectives reviewed would not be attainable through the brief training offered in the 10th and 11th years even if combined with an intensive 12th year program.
- A.2.4. Many of the programs project a management objective as part of the goal. These are not realistic goals for school leavers with no prior work experience.
- A.2.5. Preliminary estimates of equipment availability indicate an inadequate supply for most programs. World Bank loan expenditures for vocational education equipment will not be made during calendar year 1980.
- A.2.6. Teachers will require some training in order to implement the new programs. Some may have to be re-assigned to other locations.
- A.2.7. There is not now an inventory of space available for these new programs. The advent of an in-school year in 1980-81 suggests further over-population of already crowded facilities.

B. Summary of Recommendations

Group Seven suggests the following:

- B.1 Priority attention to starting a planning year, as soon as possible, which will permit the proper elaboration of an intensive 3-year curriculum for 12th year students beginning in the 1981-82 school year.
 - B.1.1. The primary goal should be to train polyvalent skilled workers and entry level technicians.
 - B.1.2. Plan for and establish a student (and public) orientation program including a practical student occupational exploration program in the 9th year during the second half of the 1980-81 school year.
 - B.1.3. Preparation of learning packages including competency-based objectives, performance standards to be achieved, student learning materials, and audio-visual aids.
 - B.1.4. Equipment list preparation according to precisely elaborated program goals.
 - B.1.5. Teacher training for the implementation of the new programs.
- B.2. Certain programs may be started on a limited basis for 12th year students in the 80-81 school-year with the objective of developing semi-skilled levels of single skills competencies. These are:
 - B.2.1. General Draftsman,
 - B.2.2. Agriculture - single options specializations
 - Orchards,
 - Mechanized Crop Production,
 - Horticulture,
 - Animal Husbandry (large or small),
 - Fishing (if boat is made available),
 - B.2.3. Clerk-Typist.

- B.3 Establishment of a program of cooperative work/
study program.
- B.3.1. This could entail the training and placement of
coordinators in the schools, who will arrange
the placement of students in private and public
enterprises four days per week and one day in
school for related subject studies.
- B.3.2. An alternative is cooperative utilization of MOL
facilities and staff for semi-skilled worker
training.

C. Meeting with Reis dos Santos 30 June 80

The following points were agreed to in principle.

- C.1. Most of the program goals are not achievable as they are now stated within the time available during the 12th year. Recommended narrowing the scope for those few which can be implemented by virtue of equipment and staff availability, i.e.,
- a. General Draftsman
 - b. Single option agriculture rather than general
 - c. Clerk-Typist
 - d. Fishing, if boat is made available
- C.2. Establish a cooperative utilization of Ministry of Labor staff and facilities in the Vocational Training Department for the 12th year during the next three school years. Begin planning for an intensive 3-year vocational education program during the 1980-81 year. Implement the first year of that program with the start of the 1981-82 school year.

<u>EDUCATIONAL GOALS</u>	<u>80/81</u>	<u>81/82</u>	<u>82/83</u>	<u>83/84</u>	<u>84/85</u>
SEMI-SKILLED	12	12	12		
POLYVALENT	3 YR Planning	10	11	12	Output Evaluation
			10	11	12
				10	11

The first output of a twelfth year intensive program following in the existing 10th and 11th year preparation in pre-university short courses can expect the students to fill semi-skilled occupations related to their fields of preparation. An intensive planning year should involve curriculum planning committees in the design activities^{1/} which will lead to the start of a program of training polyvalent skilled workers and technicians. This program should start in the tenth year or the first year secondary education to continue throughout the three years of the cycle.

C.3. A program of industrialized cooperative education with private and public industry can be developed for the start of 1980-81. This would involve the selection and training of Cooperative Education Coordinators that would be assigned to each of the secondary schools. The person should have experience in the world of work and may be selected from amongst existing faculty.

C.3.1. In the scheme the student may elect to receive on-the-job training in an establishment of his or her choosing or one of those recommended by the Coordin-

1/ See "Planning Chart".

- C.3.2. A budget equivalent to the cost of some portion of the student's schooling should be available as an incentive payment to the industry or commercial enterprise for the training to be provided. This incentive should permit the expectation that the establishment will follow an agreed to and contracted for training program.
- C.3.3. The details of the contract will be prepared by the coordinator, discussed with the enterprise trainer and the student and concluded as a tri-partite agreement to be signed by the enterprise representative, the student, and the Coordinator.
- C.3.4. The on-the-job component of four days per week can be complemented by a one day per week program in school. The content of the in-school program should include job related mathematics and science and human relations in the work setting. A group and individual guidance program should be conducted on the in-school day by the cooperative coordinator. During these sessions, problems which arise in the work setting are discussed and plans for solving them are worked out.

- C.4. A plan for carrying out the activities essential to the development of an intensive three-year curriculum should be developed. (This plan is detailed elsewhere in this report).
- C.5. Recommendations should be developed which would assist in the planning of a career guidance program. The program should address the general public and students in the primary education cycle which will enable them to make appropriate choices in the selection of the two tracks in the secondary cycle and to have the necessary information with which to choose a specific course of education within the vocational option. (These recommendations are also detailed elsewhere in this report).

D. The Needed Planning Year (1980-81) for a Successful Vocational Education System

1. Introduction

The outline of a plan is presented here which is based on a very brief period of exploration of the objectives, resources, and organization for expanded vocational education program offerings by the Ministry of Education and Science of Portugal. It is the hope of G7 that this outline will be useful to flag the planning milestones necessary in order to begin an intensive three-year program of vocational education at the secondary level. The authors caution that the planning year represents a period of intensive planning which utilizes a period of time that will only begin the process of planning needed for the three-year program which will have to continue into several of the coming years.

It will neither be possible nor desirable to complete the preparation of all three years of learning materials during the first year. By the start of the 81-82 school year, it should be possible to complete all of the essentials needed for the first input of 10th year students in that year. The preparation will need to continue into the subsequent two years, however.

Evaluation of results after the graduation and placement of the first students of the three-year cycle will be possible during 1984-85. The findings should provide significant feedback which can guide any needed revision of the curriculum.

The plan outline is predicated on the premise that there will be an intensive three-year program established by the MEC and its goal will be the training of middle level manpower in the schools to have the qualifications of polyvalent skilled workers and entry level technicians. It is further based on the concept that intensivity in the program means that most, if not all, of the instructional program is geared to the needs of occupational preparation. Lastly, it assumes a proportion of approximately two-thirds of the instructional time devoted to practical learning activities and the remainder in subject matter designed to develop the knowledge of mathematics, science and communications skills required in the performance of the tasks of the occupation for which the courses will prepare the students.

The outline for the planning year essentially consists of two phases. The first may be considered that of data gathering which includes broad research, analysis, and policy making. The second phase is that of program development and includes the preparation of instructional

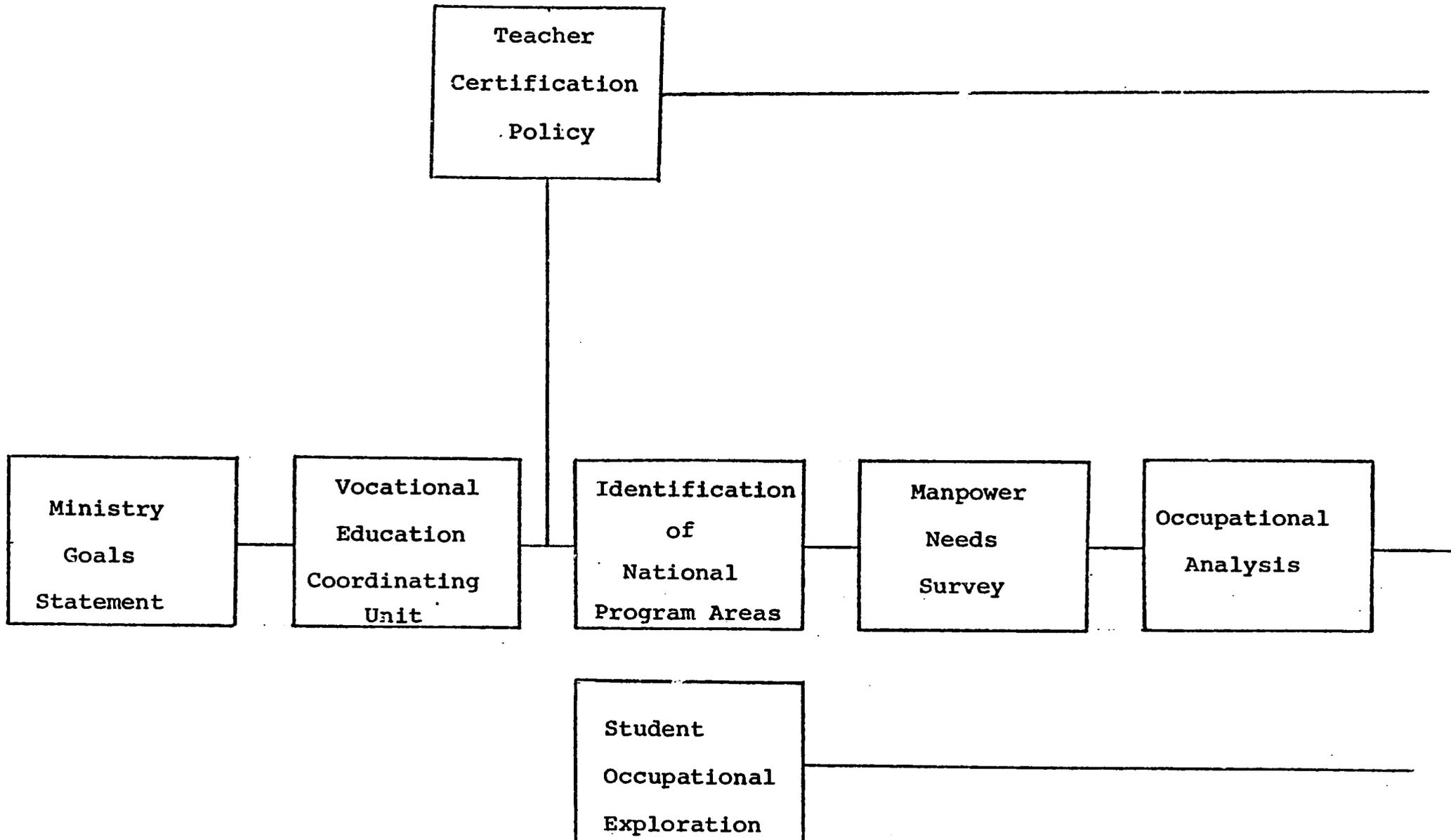
materials, acquisition of equipment needed, teacher preparation, and the admission of students.

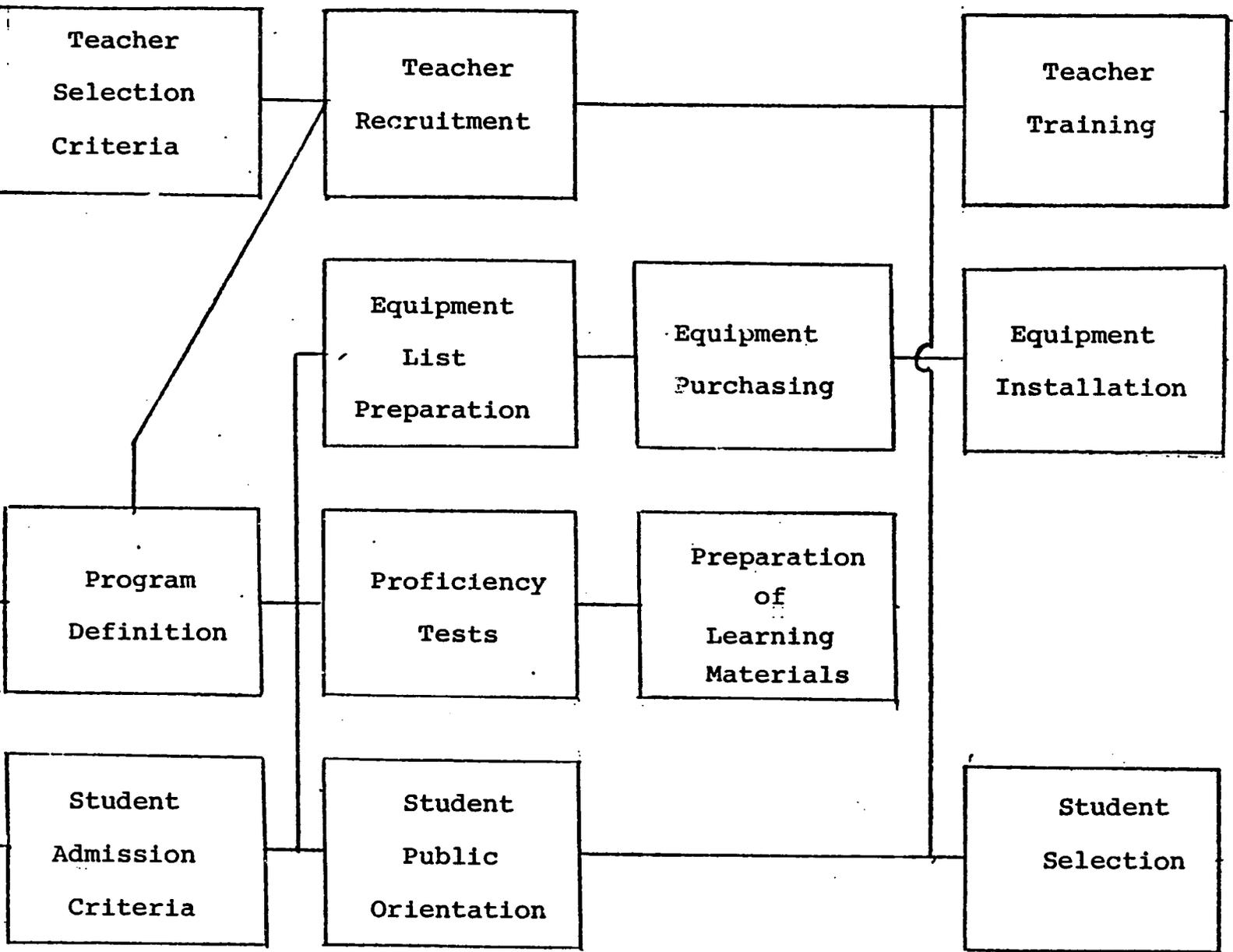
Conspicuously absent from this outline is a plan for more buildings since it is felt by G7 that it is not feasible to consider the utilization of facilities being built during school year 1981-82. Our planning projection is predicated on the use of facilities now owned by MEC, some of which are now nearing completion and the possibility of using certain facilities owned by the Ministry of Labor and others which are not being used at this time.

Priorities which will emerge from this year of planning will no doubt indicate the need to consider the construction of certain new facilities in the future. Since it is not possible to envision such construction for the start of the 1981-82 school year it is assumed that such planning activities should not occur until an initial program is underway.

The time line for the activities assumes the rapid (if not immediate) start of Phase I and its completion by the end of Autumn 1980. Phase II should follow witho interruption and continue through the Summer of 1981, ending with the start of the school year.

2. Planning Chart





11a

3. Planning Year Personnel Requirements
July 1980 - September 1981

<u>Phase I</u>	<u>Positions</u>	<u>Duration</u> <u>Months</u>	<u>Person</u> <u>Months</u>
Coordinating Unit	4-5	15	60-75
Occupational Analysis Researcher	30-40	2	60-80
Occupational Exploration	9-10	13	<u>117-130</u>
Sub-Total			237-285
<u>Phase II</u> (Tentative estimates to be redefined toward the end of Phase I)			
Program Definition	10-15	0.5	5-7.5
Proficiency Tests, Learning Materials, Equipment Lists	30-40	10	300-400
Student Public Orientation	4-6	2	8-12
Occupational Exploration Teachers	50-60	3	150-180
Teachers for the 10th year Startings	80-100	3	<u>240-300</u>
Sub-Total			<u>703-900</u>
TOTAL			<u>940-1185</u>

Technical Assistance

Advisor to Coordinating Unit	1	15	15
Subject Matter Specialist	3	4	12
Preservice Teacher Training	3	3	9
TOTAL			<u>36</u>

4. Ministerial Goal Statement

A general statement of the purpose and authority for the establishment and/or expansion of the vocational education program of the Ministry of Education and Science of Portugal should be prepared, it should contain:

- 4.1 Reference to legislative authority.
- 4.2 Educational objectives for the establishment of vocational and technical training.
- 4.3 Policy for its placement within the secondary education division.
- 4.4 Policy to contribute to providing middle level manpower for the public and private sectors.
- 4.5 Policy for cooperation with other public and private institutions which contribute to the training of manpower.
- 4.6 A mandate for the establishment of Occupational Advisory Boards for each of the program areas to consist of representatives of employees, labor, and education who will counsel the Ministry re: program needs, course content and revision, student performance objectives, equipment needs, and student job placement.

5. Vocational Education Coordinating Unit

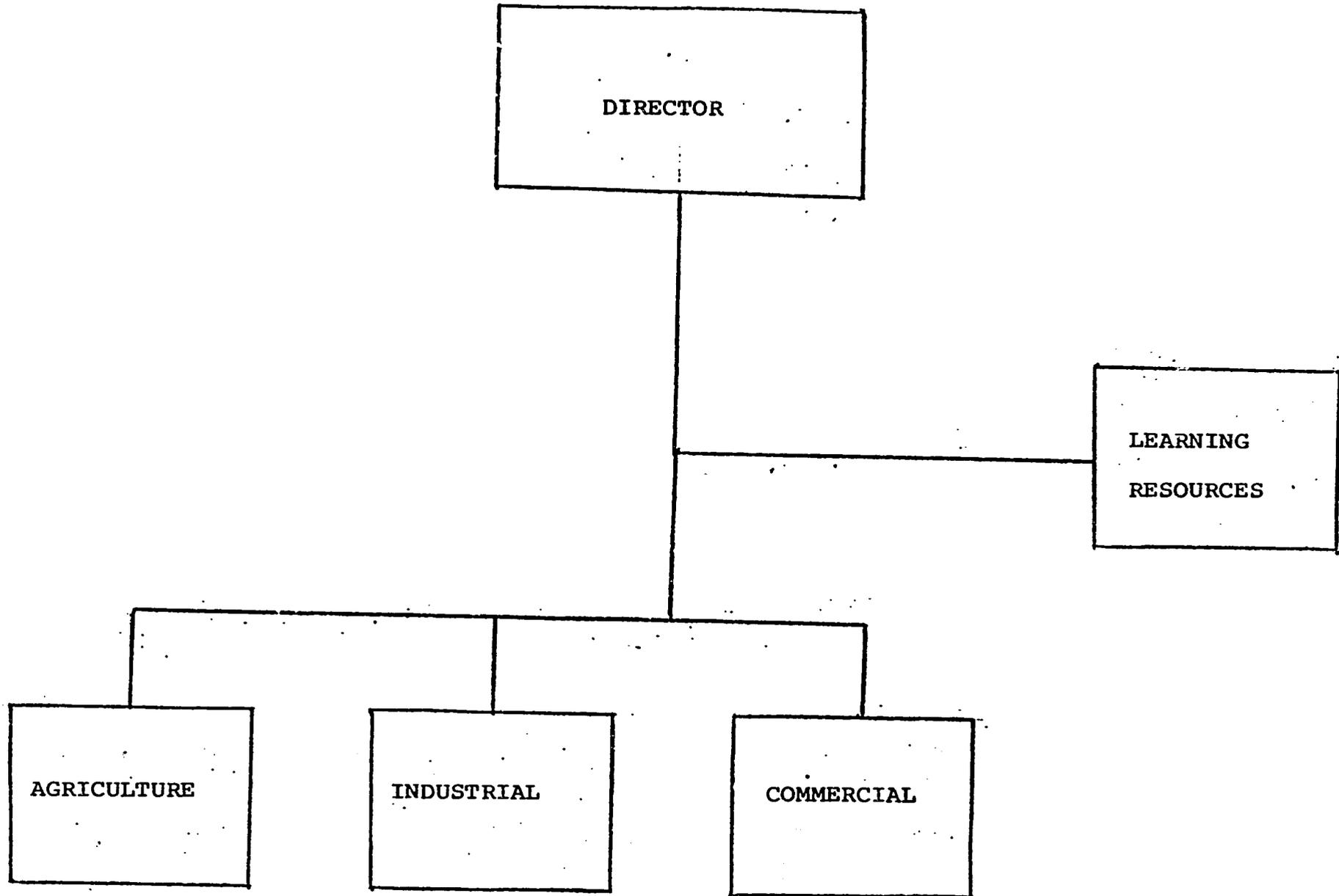
A permanent Coordinating Unit should be established within the Secondary Education Division of the MEC which will have the responsibility for coordinating all of the programs of Vocational Education within the Ministry. In addition, it will have responsibility for coordinating with other ministries which have any responsibility for manpower training.

5.1 A Director of Vocational Education should be appointed to provide leadership for carrying out the activities contained in the Ministry's Goal Statement. He or she will supervise the work of program area specialists and will make recommendations for changes in the size, composition, and functions of the Unit. Certain changes of size and composition will occur as the planning year progresses. He will conduct meetings of the Unit Staff which will advise him in the formulation of operational policy and the development of instructional materials. He will guide the development of regional advisory boards comprised of representatives of employers, labor, and education.

- 5.1.1 It will be desirable to provide institutional and internship training for the person selected, so that there will not be interference with the planning year. Such training should occur over the summers of 1981 and 1982.
- 5.1.2 An advisory resource should be provided to the Director with international experience in vocational education planning, implementation, and evaluation.
- 5.2 The attached chart of functions illustrates an initial permanent staffing according to functions which it can be assumed will be needed. Three program areas are identified under which all of the course offerings can be listed. The attempt to limit the categories to three should be considered provisional. They may be increased in number later based upon a need to subdivide the three in order to more effectively provide the developmental and supervisory functions the Unit is to carry out, or because additional areas of program are subsequently identified which require the attention of a program area specialist. On the other hand it may be considered that this initial grouping of functions suggests a logical leadership framework which can effectively serve to organize and supervise the program in its initial implementation.

- 5.2.1 A Coordinator for each of the three functions should be appointed as soon as it is practical to identify them. Each should have in-depth experience in one or more of the program areas which will be developed under his direction. The person should have experience as a skilled worker, or supervisor in one or more enterprises, and teaching experience appropriate to the subject areas he or she will supervise.
- 5.2.2 It will be necessary to provide training in vocational education planning and in the administration and supervision of vocational education. These should be planned as in 5.1.1 above.

VOCATIONAL EDUCATION COORDINATING UNIT FUNCTIONS



6. Identification of National Program

The coordinating unit should meet as soon as it is appointed to identify occupations and groupings of occupations for which it is felt that a considerable national need of manpower exists which would warrant the establishment of vocational courses.

Information such as may be available in the Ministry of Plan and Finance, the Ministry of Labor, and international organizations,^{1/} which have studied the question of manpower needs, should be the basis for identifying general category requirements. These studies will usually be organized by industry, the nature of the principal material used, i.e., ferrous metals, minerals, etc., and by region of the country.

It will then be necessary to identify occupations and groups of occupations at the skilled worker/technician level which are usually found within the general categories.

The lists of major occupations thus generated will constitute the basis for the detailed manpower needs survey to follow.

^{1/} "Employment and Basic Needs in Portugal", International Labor Office, Geneva 1979.

7. Manpower Needs Survey

A plan should be developed to survey by questionnaire the major establishments in the public and private sector who are likely to employ personnel in one or more of the categories identified. The lists can be submitted with spaces for responses on numbers currently employed and projected as needed during the next five years. Spaces should be left for the responder to list "other" occupations not listed.

8. Occupational Analysis

8.1 With the responses to the Manpower Needs Survey in hand it will then be possible to tabulate the data thus received and to analyze this with respect to the needs identified. Considering the representative character of the survey it then will be possible to predict to a considerable degree of accuracy the differential needs by region.

8.2 Selections of occupations for the development of vocational programs will then be possible with the goal of preparing students to fill jobs which are likely to exist when they graduate.

8.2.1 Several criteria should be established as basis for making such selections. They would include, appropriateness to general educational goals, extent of need, feasibility with respect to existing faci-

lities which are convertible, etc.

8.3 Once the list of occupations for which programs will be developed is refined, check lists with descriptions of the occupation and the tasks performed (i.e., the competencies involved) can be prepared which will be used as the basis for curriculum development.^{1/}

8.3.1 Teams of investigators should be organized with respect to global need and regions to be studied and after a brief training preparation will visit a selected sample of employers to gather the data needed for the analysis.

8.3.2 The teams can be selected from amongst teachers in the existing vocational programs who have a background in the occupations to be studied.

8.3.3 The checklists should provide information regarding the range, frequency, and importance of the tasks performed, the type of equipment used, the materials which are processed, and the competencies required.

^{1/} The G7 Library contains such analyses for U.S. occupations in: agriculture, construction, and manufacturing.

9. Program Definition

With the data provided by the Manpower Needs Survey and the Occupational Analysis available it will be possible for the Coordinating Unit to make judgements upon which planning and implementation of programs can proceed. Consideration should be given to budget, teacher availability, space availability, the ability to acquire the needed equipment and expendable materials, and the time needed to prepare the packages of learning materials in order to establish the timetable for the implementation of new programs.

9.1 The manpower data should be interpreted to determine which courses should be offered and where.

9.2 The occupational data should be consolidated to provide profiles of the competencies which should be developed during the program of instruction. These will constitute the instructional objectives around which the courses will revolve.

10. Proficiency Tests

Criteria must be established for setting the minimum levels of proficiency acceptable for the tasks identified during the occupational analysis. The tests are to be seen as models of competencies which the student will have upon graduation and which will guide students,

teachers, and prospective employers as to expectations which are achievable by the instructional program, and degrees of excellence achieved by the individual students.

11. Preparation of Learning Materials

11.1 In this phase the curriculum committees will prepare learning packages to be used in the instructional programs. The contents will include the following elements:

- A. Occupational Goal Statement, including measurement criteria.
- B. Content Outline based on occupational competencies to be trained.
- C. Task details which describe the knowledge, skills, and attitudes to be formed in order to enable the students to achieve the competencies.
- D. Lesson plans
- E. Instructional sheets
 - 1. Job sheets
 - 2. Operations and Process Sheets
 - 3. Information Sheets
- F. Audio-visual aids
- G. Tests
- H. An on-the-job training program plan to occur during the 12th year.

11.2 Curriculum Development Committees should be comprised of 3-4 teachers competent in the technical and practical aspects of the subject matter and should be formed for each course program to be developed.

11.3 At this point it will be desirable to provide subject matter specialists with familiarity in one or more of the courses to be developed to advise the coordinators of the coordinating unit and to work directly with the curriculum development committees.1/

11.4 In addition, a library of reference materials should be available on the subject matter and should include:2/

Textbooks

Task Competency Inventories

Learning Packages

Visual Aids

Proficiency Test Materials

1/ G7 has several leading U.S. vocational educators (some Portuguese speaking) standing by. We would be honored to furnish this technical advisory service.

2/ Innovative U.S. materials can be furnished.

12. Student Occupational Exploration

A program of exploration in the use of tools and machinery in the processing of materials in representative areas of economic activity will be elaborated.^{1/} It can be offered to ninth year students. This will aid the students in making choices and will improve the ability of the schools to determine student interests in order to guide their choices. The exploration material should be developed by the coordinating unit as early in the planning year as is possible so that curriculum, equipment, and supplies will be available for the programs start up in the second half of the planning year.

13. Student Admission Criteria and Selection

At the time the programs of instruction are determined (see paragraph 9, above) it will be possible for the coordinating unit to formulate recommendations for student admission for approval by the head of the secondary division and the Secretary of State for Education.

^{1/} An innovative U.S. model is available.

13.1 The following should be considered as criteria for selection:

- a. Student choice
- b. Aptitude test results
- c. Recommendations of the feeder schools in the second cycle of primary education, and
- d. Academic achievement needed to successfully complete the course.

13.2 Planning for the procedures, to be followed by the feeder schools administration to complete the process of guidance toward student selection and admission to the programs, will be designed by the coordinating unit.

14. Student and Public Orientation

A program should be developed which will inform the student population, the general public, and potential employers of the programs to be offered. A variety of media should be employed. The messages should include:

14.1 Announcement of offerings and their locations.

14.2 Information regarding the occupations that people will qualify for by completing the courses. Describing the tools, materials, and conditions of employment to be expected.

14.3 The availability of counselling services within the schools and employment services.

14.4 The development and offering of aptitude testing services.

14.5 The availability of placement services upon graduation.

15. Equipment List Preparation and Implementation

15.1 An inventory of all existing MEC owned equipment, tools, and materials and their location will be prepared.

15.2 Lists of additional equipment which will be needed to implement the programs to be offered (as defined in 9. above) will be prepared. The major items which will be needed and their quantities can be identified following the planning work that will have been done in Program Definition. Approximately 20% of the equipment budget should be held in reserve until the Proficiency Tests (10. above) are completed and the Preparation of Learning Material (11. above) are under way. At that time it will be possible to more accurately complete the equipment lists.

15.3 Expendable materials lists will be prepared for each of the three years of program and their delivery should be timed with the need to use them.

- 15.4 The curriculum development committees (identified in 11.2 above) will carry out the equipment list preparation with the assistance of the coordinators and subject matter specialists.
- 15.5 Tender documents should be prepared so that the delivery of equipment will permit their installation in time for the start of the 1981-82 school year.
- 15.6 Equipment installation should be contracted to firms competent to install the equipment in the schools. Their work will be inspected in the process of the work by coordinating unit staff or their designees in addition to MEC facilities personnel as may be required.
- 15.6.1 Work should be contracted to be completed over the summer and after school hours.
16. Teacher Selection and Recruitment
- 16.1 A clear statement of job description and the required qualifications should be established for each position so that appropriately qualified teachers will come forward. In addition, it is desirable that a test of representative competencies be administered which will have a written and practical component.

16.2 An appropriate plan for the recruitment of teachers within and outside the MEC should be designed and implemented.

17. Teacher Training

A program of teacher training should be designed which will have a pre-service and an in-service component. Selected school sites where equipment has been installed should be used to provide the pre-service component.

17.1 The pre-service component should include the following elements:

- A. The use of competency-based curriculum materials.
- B. Organization in the use and maintenance of workshop and classroom facilities.
- C. Methods of teaching related subjects.
- D. Methods of supervising practical learning activities.
- E. Storage of materials.
- F. Safety program implementation.
- G. Revision and adaptation of curriculum.

17.2 In-service component:

- A. Subject matter seminars.
- B. Curriculum testing and revision.
- C. Performance evaluation critiques.

17.3 Assistance should be provided to guide the training of teachers.

18. Teacher Certification Policy

This should be reviewed to determine whether it permits the recruitment and assignment of staff in adequate numbers and with the competencies needed to implement the instructional program.

18.1 Criteria which should be considered for teachers of occupational subjects:

18.1.1 A minimum of 5 years of polyvalent experience in one or more of the occupations to be taught.

18.1.2 Appropriate qualifications in methods of teaching in workshops and related subjects.

18.1.3 Completion of adequate pre-service or in-service training.

Área colar	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Semanal T. Lectiv.		
A	PECUÁRIO AGRO- PECUÁRIA	CURSO DE TÉCNICO DE AGRICULTURA	1	Planeia e executa operações tecnológicas de cultura e o manejo de animais em explorações predominantemente agrícolas. Aplica criteriosamente equipamentos e produtos relacionados com a agricultura.	Engº Joaquim Manuel Corado Carqueira	Economia e Sociologia Agrícolas Administração e Contabilidade Agrícola Noções de Indústrias Agrícolas Trabalhos do Campo e Oficina Opções: - Culturas arbóreo-arbustivas - Equipamento Rural - Hortofloricultura	4 4 2 18 4	112 22 2 4442 112	A A B A A	
		CURSO DE TÉCNICO DE PECUÁRIA	2	Planeia e executa o manejo de animais e as operações tecnológicas de cultura em explorações predominantemente pecuárias. Aplica criteriosamente equipamentos e produtos relacionados com a pecuária.	Engº Joaquim Manuel Corado Carqueira	Economia e Sociologia Agrícolas Administração e Contabilidade Agrícola Noções de Indústrias Agrícolas Sanidade Pecuária Trabalhos de Campo e Estábulo Opções: - Exploração de grandes Animais - Exploração de pequenos Animais	4 4 2 4 14 4	112 22 2 112 3332 112	A A B B B B	

COURSES REVIEWED BY SPECIALISTS 24-30 June 1980.

Área Estudos	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Semanal T. Lectiv.		
A	INDÚSTRIAS ALIMENTARES	CURSO DE TÉCNICO DE INDÚSTRIAS ALIMENTARES	3	Executa e orienta operações tecnológicas das indústrias alimentares e efectua o controlo da produção. Faz a inspecção de produtos alimentares.	Dr. João Jardim Soares Henriques	Economia e Organização de Empresas Administração e Contabilidade Legislação e Normas Associativismo Trabalhos de Laboratório e Oficina Opções: - Indústrias de Fermentação - Óleos e Conservas - Inspeção de Produtos Alimentares	2 4 2 2 16 4	11 22 11 11 44332 112	B A B A B B	
							30			
	PRODUÇÃO AQUÍCOLA	CURSO DE TÉCNICO DE PESCAS	4	Desempenha funções de pescador qualificado (cerco, arasto, linha e redes de esalhar). Manobra com equipamento náutico do convénio a ponto sob comando de oficiais do bordo. Traça rotas e verifica rotas. Opera com equipamento mecânico, hidráulico, eléctrico e electrónico.	Dr. Vasco Valdez Bandoira	Arte Naval Tecnologia e Tática de Pesca Tecnologia de Motores e Máquinas Marítimas Tecnologia do Processamento da Distribuição e Comercialização Tecnologia das Infraestruturas Portuárias e Terrestres	10 7 6 4 3	111133 1123 1122 112 12	TE TE TE TE TE	
							30			
	CURSO DE TÉCNICO DE AMBIENTE		5	Recolhe, analisa e interpreta elementos que contribuem para estabelecer as bases do ordenamento do território. Elabora planos directores e de ordenamento.	Dra. Maria Leonor Basto da Almeida	Geografia Urbana e Rural Estatística e Cartografia do Ambiente Estudo Físico do Ambiente Sociologia do Ambiente Legislação do Trabalho	5 10 9 4 1	21111 22222 22221 211 1	119 A 19 119A, 119B 79, 109A 79	
							30			

Área Estudos	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Ensinal T. Lectiv.		
A	QUÍMICO	CURSO DE TÉCNICO QUÍMICO	6	Executa ensaios e análises químicas e físico-químicas, e interpreta os resultados. Acompanha o funcionamento e controlo de uma instalação ou unidade de produção e/ou de apoio à produção. Controla variáveis físicas e/ou químicas e introduz, entre limites fixados superiormente, alterações necessárias.	Dr. Carlos Marques de Figueiredo	Métodos Instrumentais de Análise Corrosão e Protecção de Materiais Tecnologia Química Instrumentação e Controlo Processos Químicos de Fabrico Organização Industrial	7 4 4 7 3 3	1114 112 112 1114 111 111	49B, 49A 49B, 49 A 49 D TE 49 B 29A, 29B	
	Saúde	CURSO DE TÉCNICO DE ASSISTENTE		Ver curso nº 5	Ver curso nº 5	Ver curso nº 5	Ver curso nº 5	5		
	Desporto	A apresentar em breve pelo Grupo de Trabalho								

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Área de Estudos	Formação Vocacional	Curso de 12º ano	n.º	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							H.º Semanal	T. Lectiv.		
B.	TECNOLOGIA	CURSO DE DESENHADOR DE CONSTRUÇÕES MECÂNICAS	7	Executa desenhos de peças a partir de elementos fornecidos, ou por ele recolhidos de acordo com orientações técnicas. Conhece materiais e processos de execução prática. Consulta normas, especificações, tabelas e publicações técnicas. Efectua cálculos complementares necessários ao projecto de peças. Elabora cadernos de encargos necessários descritivos.	Eng.º Henrique Manuel Soares Duarte	Desenho de Construções Mecânicas Metalomecânica e Produção Tecnologia Mecânica Teoria Geral de Máquinas Organização Industrial	16 6 3 2 3	4444 33 111 11 111	2º A 12º A 2º A 2º A 2º A, 2º B	
		CURSO DE TÉCNICO DE MANUTENÇÃO MECÂNICA	8	Controla o trabalho executado, ou em execução, aferindo-o pelas características expressas em desenhos, normas do fabrico ou especificações técnicas. Executa peças, monta, repara e conserva vários tipos de mecanismos, motores e outros conjuntos mecânicos. Procedo ao diagnóstico de avarias, define métodos de reparação e estabelece modos operatórios a utilizar na execução dos trabalhos de manutenção.	Eng.º Germano dos Santos Alves	Desenho de Construções Mecânicas Metalomecânica e Produção Tecnologia Mecânica Máquinas e Manutenção Elementos de Electrotecnia Organização Industrial	4 15 3 4 3 3	22 4443 111 1111 12 111	2º A 12º A 2º A 2º A 2º B 2º A, 2º B	
		CURSO DE TÉCNICO DE FRIO E CLIMATIZAÇÃO	9	Orienta a montagem, regula, arranja e repara instalações de frio, ar condicionado e ventilação. Interpreta e desenha esquemas frigoríficos e eléctricos. Selecciona equipamentos. Faz orçamentos.	Eng.º Carlos Manuel André Marques Carvalho	Desenho de Projectos, Medições e Orçamentos Instalações Eléctricas Tecnologia de Equipamentos Frigoríficos Montagem e Reparação de Instalações Termodinâmica Aplicada Organização Industrial	4 4 6 2 4 3	22 211 222 333 1111 111	TE TE TE TE TE 2º A, 2º B	

Área Estudos	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-o-organiza- (programa)
							Horário Total	Semaval T. Lectiv.		
B	ELECTRÓNICA	CURSO DE TÉCNICO DE ELECTRÓNICA ANALÓGICA	10	Instala, conserva e repara equipa- mento electrónico. Lê e interpreta es- quemas de equipamentos electrónicos, examina resultados de testes e toma decisões (controlo analítico).	Engº José Manuel Tor- res Passos	Electrónica geral Electrónica Aplicada Telecomunicações Electrónica Industrial Organização Industrial	8 12 5 4 3	11114 444 1112 22 111	2º B 12º B 2º B 2º B 2º A, 2º B	
		CURSO DE TÉCNICO DE ELECTRÓNICA DIGITAL	11	Interpreta esquemas de equipamentos digitais. Monta, ensaia e controla equipamento digital. Executa progra- mas numa dada linguagem.	Engº José Eduardo de Carvalho Serranho	Electrónica Digital Sistemas Digitais Instrumentação Programação Organização Industrial	6 15 4 4 3	222 4443 22 22 111	2º B 2º B 2º B 2º B 2º A, 2º B	
	ELECTROTÉCNIA	CURSO DE DESENHADOR PROJECISTA ELECTRO- TÉCNICO	12	Desenha e resolve questões relativas à concepção de instalações eléctricas. Elabora e organiza, total ou parcialmen- te, uma instalação eléctrica. Acompan- ha e orienta ou fiscaliza a execução de instalações eléctricas.	Engº António Alberto Soares	Desenho Projecto e Orçamentos Instalações Eléctricas Práticas de Instalações Eléctricas Organização Industrial	12 5 4 6 3	3333 221 1111 33 111	2º B 2º B 2º B 12º B 2º A, 2º B	
		CURSO DE TÉCNICO DE INSTALAÇÕES ELÉCTRICAS	13	Executa instalações eléctricas. Monta, instala e repara equipamentos eléctricos. Assegura a manutenção dos equipamentos. Fiscaliza instala- ções. Orienta montagens.	Engº António Alberto Soares	Prática de Instalações Eléctricas Laboratório de Máquinas Eléc- tricas Tecnologia de Electricidade	11 4 5	4433 4 11111	12º B 2º B 2º B	

Área Estudos	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Semanal T. Lectiv		
B	TÊXTIL	CURSO DE TÉCNICO TÊXTIL	14	Seleciona matéria prima, mistura-a, executa o fio. Seleciona corantes, executa cores e tinges as fibras nos vários estados têxteis. Desenha um tecido, prepara-o, calcula-o e executa-o. Executa estamparia. Prepara e utiliza o produto têxtil final. Realiza o controlo da qualidade dos produtos nas várias fases. Alina máquinas têxteis.	Engº Germano dos Santos Alves	Tecnologia e Oficina de Tecnologias	7	1123	TE, 129 F	
						Tecnologia da Fiação	4	112	TE, 129 F	
						Tinturaria e Acabamentos	8	111122	TE, 40, 129 F	
						Desenho e Estrutura do Tecido	4	22	TE, 129 F	
						Controlo da Qualidade	4	112	TE	
						Organização Industrial	3	111	29A, 29B	
							30			
CONSTRUÇÃO CIVIL	CURSO DE TÉCNICO DE OBRAS	15	Compreende o projecto, o caderno de encargos e o plano de trabalho duma obra. Conhece a sequência das diferentes fases duma construção. Conhece os materiais de construção e a técnica da sua aplicação. Organiza e em talão e modo os trabalhos realizados.	Engº Vitor Manuel da Silva Pedroso	Planeamento e Produção	4	112	39		
					Tecnologia	3	111	39		
					Técnicas de Construção A	8	44	129 F		
						Técnicas de Construção B	10	442	39	
						Desenho de Construção	4	22	39	
						Legislação do Trabalho	1	1	79	
							30			
CURSO DE DESENHADOR DE CONSTRUÇÃO CIVIL	16	Utiliza correctamente o material do desenho. Interpreta e executa, de acordo com as normas, desenhos de construção civil (conjunto, cortes e pormenores). Modo e organenta trabalhos de construção civil.	Engº Leona dos Santos Faria	Geometria	4	22	39			
				Tecnologia	3	111	39			
				Medições e Orçamentos	4	22	39			
						Desenho	18	44442	39	
						Legislação do Trabalho	1	1	79	
							30			
CURSO DE TÉCNICO DE TOPOGRAFIA	17	Compreende conceitos básicos da topografia. Interpreta e executa desenhos topográficos e cartas. Executa trabalhos correntes de planimetria e altimetria incluindo medições de áreas e volumes.	Engº Manuel Fernando Oliveira Duarte	Matemática Aplicada	3	111	39, 19			
				Desenho Topográfico	4	22	39			
				Tecnologia	4	1111	39			
						Topografia Prática	18	44442	39, 7E	
						Legislação do Trabalho	1	1	79	
							30			

Área Estudos	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	ordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Semanal Total	T. Lectiv.		
C	SECRETARIADO ✓	CURSO DE SECRETÁRIO/A	18	Planifica, organiza e controla os trabalhos do secretariado. Coordena as marcações de reuniões e entrevistas, assegurando os contactos internos e externos. Secretaria as reuniões e toma notas stenográficas para redigir as minutas das actas. Faz retroversões e traduções. Substitui o gerente quando para tal é solicitado/a.	Prof. Joaquim de Sousa Almeida Lima	Língua Portuguesa Língua Francesa ou Inglesa Documentação ou Legislação Práticas do Secretariado Esterodactilografia em Português Esterodactilografia em Francês ou Inglês	2 3 3 8 6 6	11 111 111 2222 222 222	8º A 8ºB, 9º 6º 12º C 12º C 12º C	
	CONTABILIDADE E ADMINISTRAÇÃO ✓	CURSO DE TÉCNICO DE CONTABILIDADE	19	Executa tarefas de um técnico de contas.	Dr. Amália de Oliveira Lopes	Língua Portuguesa Análise Estatística Introdução aos Computadores Fiscalidade da Empresa Contabilidade Analítica Práticas de Contabilidade	2 3 3 6 8 6	11 111 111 222 2222 222	8º A 7º 6º 6º 6º 6º	
	INFORMÁTICA ✓	CURSO DE PROGRAMADOR DE COMPUTADORES	20	Analisa aplicações informáticas, traduz em termos de algoritmo, concretiza o programa que comanda o tratamento automático, testa exaustivamente a solução proposta, documenta as tarefas executadas.	Engº António Jorge Martins Barata	Práticas do Liguagem de Programação Sistemas de Exploração e Utilitários Aplicações Informáticas Língua Inglesa Matemática Aplicada Legislação do Trabalho	10 5 5 3 4 1	22222 11111 1112 111 1111 1	TE TE TE 9º 10º 7º	
	EDUCAÇÃO SOCIAL	CURSO DE EDUCADOR SOCIAL	21	Colabora em programas de educação de base de adultos. Presta ajuda técnica com carácter educativo e de animação à família e a grupos a partir da terceira infância. Desenvolve acções de bem estar em grupos de idosos. Participa em programas de desenvolvimento social e comunitário. Ensina técnicas ligadas às tarefas de vida quotidiana.	Gr. Susana Lezíria Fernandes	Língua Portuguesa Língua Francesa Direito Desenvolvimento do Recursos Sociais e Familiares Psicopedagogia	2 3 3 15 7	11 111 111 33333 22111	8º A 8º B TE TE TE	

Área Estudo	Formação Vocacional	Curso do 12º ano	nº	Perfil do curso	Coordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Semanal T. Lectiv.		
D	ADMINISTRAÇÃO PÚBLICA	TÉCNICO DE ADMINISTRAÇÃO PÚBLICA	22	Faz correspondência, regista e anjui va documentação. Redige relatórios, prepara documentos, assume funções do tesoureiro ordenando o Livro da Caixa e Livro de Contas Correntes. Faz orça mentos, liquidações calcula rendimen tos colectáveis dos contribuintes e aplica as respectivas contribuições. Atende pessoalmente o público e infog ra sobre os vários impostos existentes	Dr. Matos Pereira Sequeira de Moraes	Língua Portuguesa Administração Pública Economia Noções de psicologia Planificação e Orçamentologia Noções de Direito Económico e Social Contabilidade Pública	2 4 4 4 4 4	11 211 22 1111 112 1111 112	89 A 79 79 79 79 79 69,79	
	JORNALIS -TURISMO	TÉCNICO DE INFORMAÇÃO	23	Recolhe informação a partir de fontes escritas e orais. Prepara textos vi sando a informação jornalística e/ou comunicados para publicação directa. Planifica e coordena a execução de pu blicações. Redige notícias. Prepara entrevistas orais e escritas na líng ua materna e na língua estrangeira.	Dr. Maria Eulália Cordalino Ferreira	Língua portuguesa Língua Francesa ou Inglesa Direito, Administração Púb blica e Legislação da In formação Introdução às Ciências Sociais Comunicação Social Prática Jornalística Tecnologias da Comunicação Social	2 3 4 4 6 7 2	11 111 1111 1111 222 2221 11	89 A 89,99 79 TE 89A, 89B, TE TE TE	

Área Estudos	Formação Vocacional	Curso do 12º ano	n.º	Perfil do curso	Ordenador do curso	Plano Curricular	Carga		Prof. (grupo)	Autores-coordenad. (programa)
							Horário Total	Semana T. Lectiv		
E	ARTES E TÉCNICAS GRÁFICAS	CURSO DE TÉCNICO DE ARTES GRÁFICAS	24	Concebe ou projecta maquetas ou arte final. Responsabiliza-se pela impres- são da matriz, pela oficina de im- pressão ou fotomecânica, atelier de publicidade ou de arrajo gráfico.	Arq. Daniel Luz Silva	Desenho Gráfico	10	3322	59 TE	
				Técnicas Oficiais		10	3322	129 F, TE		
				Laboratório Fotográfico		4	22	TE		
				Estudo e Análise dos Materiais		3	12	49 B		
				Organização Industrial		3	111	29A, 29B		
					30					
	ARTES E COMUNI- CAÇÃO AUDIOVISUAL	CURSO DE TÉCNICO DE MEIOS AUDIOVISUAIS	25	Elabora material audiovisual Maqueta ou concebe enquadramentos e/ou adero- ços.		Projecto e Desenho	10	3322	59 TE	
					Técnicas Oficiais	10	3322	129 F, TE		
					Estudo e Comportamento da Forma Humana	5	122	59 TE		
					Desenho de Projecções	4	22	59		
					Legislação do Trabalho	1	1	79		
						30				
	ARTES E TÉCNICAS DO FOGO	CURSO DE TÉCNICO DE DESIGN CERÂMICO/METAIS	26	Concebe em termos de modelação/forma- ção peças no âmbito da cerâmica e/ou dos metais.		Desenho e Projecto	12	3333	59 TE	
					Técnicas Oficiais	12	3333	129 F, TE		
					Tecnologia e Comportamento dos Materiais	3	12	49 B		
					Organização Industrial	3	111	29A, 29B		
						30				
	EQUIPAMENTO E INTERIORES	CURSO DE TÉCNICO DE EQUIPAMENTO	27	Controla o fabrico, custos e a quali- dade de equipamentos. Concebe mobiliá- rio e/ou equipamento cénico.		Desenho e Projecto	10	3322	59 TE	
					Técnicas Oficiais	10	3322	129 F, TE		
					Materiais e Estruturas	4	22	39, 59, TE		
					Tecnologia e Comportamento dos Materiais	3	12	49 B		
					Organização Industrial	3	111	29A, 29B		
						30				
	ARTES E TÉCNICAS DOS TECIDOS	CURSO DE DESINHADOR TÊXTIL	28	Concebe, desenha e executa padrões textéis para oficina		Desenho e Projecto	12	3333	59 TE	
					Técnicas Oficiais	12	3333	129 D, TE		
					Tecnologia e Comportamento dos Materiais	3	12	49 B		
					Organização Industrial	3	111	29A, 29B		
						30				